

COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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Revelations in Coke Statistics

BYPRODUCT coke is a consumers' industry from the viewpoint of the coal man. Final statistics for 1920 of the production and sale of byproduct coke, just published by the Geological Survey, show that of a total production of 30,833,951 net tons of coke in that year, producers themselves used 22,848,461 tons, or 74 per cent. Of the byproduct breeze and screening, the producers sold a third as much as they used themselves.

Sales of coke totaled 8,131,000 net tons, of which 4,000,000 tons was furnace coke. Next in importance were sales for domestic use, 2,361,737 tons, valued at \$21,000,000, an average of \$8.90 per ton. The remaining 1,715,000 tons was foundry coke. Michigan led in sales for domestic use, with nearly half a million tons; Indiana was second, and Illinois and New Jersey followed, each with sales for this purpose of more than 200,000 tons.

The transition from beehive to byproduct manufacture of coke means more than the mere statement implies—it means that the coke business is leaving the hands of the coal industry and going to the steel companies and public utilities.

Transportation the Controlling Factor In Coal Prices

NOT the least significant of the phenomena attending the preparations of the country for a strike of the bituminous coal miners next month has been the rise in production and decrease in prices. There are those who are more suspicious than well informed who have suggested that the operators really desire a strike, or at least the threat of one, as a stimulus to the market, which has been sagging for many months. It has been intimated by many, for instance, that the only hope for profit lies in creating a demand in excess of current requirements and that at the first opportunity the price would be shoved skyward.

It is true that the decrease in price has been insignificant in itself and has been confined to a few coals on the list, but the fact that with the increase in demand and production of the past two months the market has clung to the bottom and even sagged is indicative of the truth that it is the law of supply and demand and not the producer that sets the price. From the beginning of the year to the middle of February output gained 40 per cent while prices decreased 5 per cent.

That such could be true is due to the fact that the law of supply and demand has been unhampered either by car shortage or labor trouble. It is the best possible evidence in support of the contention of the coal industry that, given ample transportation at all times, there never will or can be inordinate coal prices. Starting at a trifle over seven million tons per week, the railroads

have had no difficulty in furnishing cars and transportation for a gain of 40 per cent, or to more than ten million tons per week. But starting at ten million tons, they would be sore pressed to meet a demand on the part of the country for an increase of 10 or 15 per cent.

The mine capacity to be tapped is so great that the pre-strike spurt has as yet brought forth nothing but cheap coal. With every fresh call for a ton of coal there are two tons offered. Demand is even being anticipated and coal that has not been sold is mined and loaded into cars. This coal is cluttering up the junction points and classification yards as well as filling mine tracks. It is being freely offered to avoid demurrage. With the present organization of the bituminous coal industry the country can have cheap coal to the extent that it is willing to support a transportation system bearing the ratio to maximum demand that the one we now have bears to the coal demand of today.

Trade Association a Vital Necessity

ONLY one kind of an angel will rejoice over the news that the Peabody Coal Co. has repented of its membership in the National Coal Association, and that kind of angel is the orthodox believer in the policy of breaking up big business. There are those who hold that business possesses such great powers of injuring the rest of us that safety for the many lies in keeping it in small and relatively impotent units. The supporters of this view—and they number many thoughtful and wise men—have much on their side. The powers of resistance to government, labor or other business possessed by an enterprise so vast as the Steel Corporation are terrifying to them. They have favored the strictest construction of the Sherman and Clayton acts, and seek to multiply the regulatory functions of government exercised by the Federal Trade Commission. To such observers the rise of trade associations has appeared a menace, checked for a moment by the Hardwood decision but still formidable. Such men as these will welcome the sign of disintegration shown when one of the largest bituminous operators withdraws from trade associations, national and local—but only such.

The closer observer of the soft-coal trade, however, has come to realize that the associations are vitally needed. He knows that the consuming public has suffered less from the buccaneering of the profiteer than from the waste of competitive commercial armament. He knows that it is too much rather than too little competition which has sometimes prevented the industry from giving the integrated service the public has a right to expect. He knows that the trade association guided in legitimate channels is the most hopeful means that has yet appeared of bringing about that stabilization for which Washington yearns. For it is to the

trade association that we must chiefly look for developing saner methods of mining and marketing and for educating producer and consumer to their mutual responsibilities and interests.

So vital is the need for the trade association that American business may be counted upon to attain its legitimate ends in some way acceptable to the Supreme Court of the United States. But the cause of the coal-trade association is not helped by the secession of one of the leading members. Neither, we predict, will the interests of Illinois be helped in its 30-year rivalry with the Middle Appalachian. It was not by chance that the operators' association first developed in the Middle West; it was rather because of a competitive pressure from without and within so intense as to evoke an appeal for government intervention. Remember that when freight rates come down West Virginia will move some hundreds of miles nearer Chicago again.

Anthracite Misinformation

WHAT a monstrous steal the officers of the United Mine Workers in the anthracite region have exposed! In a statement given to the press last Saturday Messrs. Kennedy, Golden and Brennan, presidents of the union districts in that region, announce that according to the statements of the operators themselves the labor cost per ton of anthracite is but \$3.92, whereas the public in such cities as Philadelphia and New York are charged as much as \$16 per ton. Let those who exact the difference subject themselves to deflation, say these union officers. Do not ask the miners to take less for their meager share when there is such a spread in the figures.

It is true, however, if one has the interest and patience to delve a bit further into the facts than have the authors of this inflammatory statement, that one finds things are not as Mr. Kennedy has pictured them. But we are not sure that he and his colleagues are as ignorant of the real facts as they seem, but rather that they are guilty of a clumsy attempt to becloud the issue, which is how to lower the cost of coal to the public. They note that "the only solution the operators present is to reduce the wages of the mine workers" and add:

"The operators very skillfully avoid any reference to reductions of a substantial nature in the matter of their own profits, profits of the railroads, profits of the coal sales companies, the royalty takers and distributing agents. It is, therefore, obvious that there must be some connection between the operators and all those who handle coal between the operators and the consumers, and, of course, from an interested standpoint the operators can only see deflation as far as the miners are concerned, and a continuation of the earnings of operators, railroads, sales companies and others."

Mr. Kennedy then proceeds in the following words to fix the responsibility for the cost of anthracite:

"The operators fix the labor cost of a ton of anthracite coal at \$3.92, and they receive wholesale, f.o.b. mines \$6.15 for pea coal, \$7.85 for stove coal, \$7.95 for nut coal, and \$7.60 for egg coal. People in New York, Philadelphia and elsewhere in the anthracite-consuming territory pay as high as \$16 per ton for coal, which is over \$12 a ton more than the labor cost of \$3.92. Therefore a more substantial reduction can be made in the cost of coal by a cut in the profits

made above the \$3.92 labor cost, quoted by the operators."

Now the figure of \$3.92 represents the average labor cost for all anthracite—large and small sizes. Reference to the market pages of any issue of *Coal Age*, or inquiry from any seller of hard coal will disclose that the prices of the sizes below pea, which together make up 30 per cent of the total output, are from \$1 to \$3.50 per gross ton—that is, below even the labor cost of their production. These sizes are sold for such prices because in competition with other fuel they are not worth more. This is primer stuff. The producer places on the larger and more desirable sizes a price sufficient to offset the loss on the small coal.

The same authority that gives the labor cost quoted above says that other costs, including supplies and overhead, per ton of average output are \$1.73, which gives a total average mine cost for anthracite of \$5.75 per gross ton. After the loss on the small sizes is subtracted from the difference between this figure and the selling price at the mine for, say, nut size at around \$8 per ton, there remains a margin of around 60c., from which, after federal taxes, selling expenses and interest on borrowed money are subtracted, there remains the profit of the producer. By no stretch of the imagination can this profit be figured at over 50c. per gross ton on the average; for many it is less and of course for others, more.

The census for 1919 records a total of \$11,766,598 paid by all anthracite producers for royalties and rents on a production of 88,000,000 net tons, or about 15c. per gross ton. The margin allowed the sales companies has for years been 10c. per gross ton and the Fuel Administration allowed 20c. The retail dealers maintain that the dealer who can average 50c. per ton on what he handles is the exception. As for the profit to the railroads in hauling anthracite, we have no data, and we doubt if there are sufficient accountants in the country to correctly determine that figure.

We therefore arrive at the point where we can say that were all vested rights in coal lands confiscated, and leased coal taken without royalty, were all profits to the producing industry, in which according to the census of 1919 there is invested \$433,868,000, eliminated, and were the distributing and selling agents and the retail dealer to forgo their profits, it would be possible at the very outside to lower the price on coal, retailing in New York and Philadelphia for \$15 per net ton, by not more than \$1.25, or less than 9 per cent.

Who besides Mr. Kennedy and his ilk would ask such an industry to function without profit?

It is idle in the present instance, however, to discuss these ramifications. The operators have control over production only, and they are addressing themselves to the lowering of mine costs. Wages constitute 70 per cent of the cost of production. A commission appointed by the President added 17 per cent to the wage scale in 1920, when living costs were at their peak. This was responsible for an increase of \$1 in the cost of the domestic sizes of hard coal. Living costs have declined to a point below what they were when the hard-coal mine labor established the wage prevailing prior to the last increase. The point at issue is whether the union will consent to deflation in proportion, as it demanded inflation when the cost of living was ascending. We believe the public is better informed than Mr. Kennedy pretends to be.

At Clifford Mine a Flexible Storage and Reclamation Plant Counteracts Fluctuations in Demand

By a Single Conveyor Coal Is Taken to a River Tipple or to Storage or Returned from Storage to the Railroad or the River Tipple—
Hoistman Starts and Stops All Motors Except in River Loading

BY R. P. LEWIS*
Wheeling, W. Va.

EVERY mine operator and employee well realizes that coal mining has been a more or less seasonal industry. From the standpoint of the mine employee, periodic slumps and the resultant closing down of operations mean a cessation of income and a correspondingly decreased yearly wage. The result is dissatisfaction and a feeling of unrest. If some means could be devised whereby the mines could be operated during periods of small or no demand, this evil would be largely mitigated.

The effect of a periodic or seasonal market on the operator is somewhat more complex than on the employee. During the period of no demand, for example, few or no sales are made and no income is available, yet the general overhead must be met and the mines must be kept clean and in condition to meet the demand when it shall arise. This means expenditure of money with no income to counterbalance it.

Again, consider the period of specific demand, the time, for example, when, in the bituminous fields, there is little or no market for slack. At such seasons this part of the mine product is an incumbrance. It must be disposed of somehow, even though it has to be thrown into the "gob" or on the dump. This requires labor and represents an absolute loss. Why not store the refuse of this period for salvage when this particular grade of coal shall again be in demand?

MEANS OF AVOIDING PENALTY OF LOW RATING

Everyone in any way connected with the coal-mining industry is familiar with the effect of storage on car supply. Delays in delivering coal from the face to the railroad cars often occur owing to the breakage of equipment, to the derailment of mine cars and locomotives or to any of the hundred and one accidents that frequently occur at mines. In this event some of the railroad cars placed at the mine for loading are not loaded out on the day on which they are delivered, and a reduction in rating may be the outcome. This misfortune the operator is anxious to avoid, for if his mine be given a low rating he cannot avoid an early "shutdown." If there were a reserve of coal on which to call, the operator could always load out all the cars supplied by the railroad, and the rating would be maintained and the orders filled as scheduled.

In order to meet these difficulties the Central Coal Mining Co. at its Clifford mine, Dille, Ohio, has erected a highly complete and flexible storage and loading addition to its otherwise well-equipped plant. This addition is composed of three practically distinct parts which, nevertheless, are directly interconnected. They comprise the preparing, the storing and reclaiming, and the river loading units.

In the operation of this plant the coal is brought

out of the mine by means of a continuous rope haulage. Upon reaching the tippie the coal is dumped into the weigh hopper, weighed and then released upon an elevating conveyor. This conveyor lifts the material to a point from which, by the proper arrangement of traps or doors in the chutes, it can be directed to the screens, the crusher, the storage plant, or to the river tippie for loading upon barges.

Suppose the traps are set to direct the coal over the screens. It is in that case screened and carried by the picking table, with or without the slack removed, to the car-loading boom. In case the slack is removed, this size can be taken to the slack-loading track or to a storage pocket, from which it can be reclaimed by gravity. As an alternate disposal the slack can be directed to the storage and river conveyor and taken to the storage pile or to the river tippie.

With the chute traps set to direct the coal to the crusher instead of over the screens, it is possible to crush the coal and then dispose of it in exactly the same manner as the slack, previously described. In case run-of-mine is to be stored or taken to the river tippie, the traps are set to direct the coal to the storage and river conveyor, previously referred to, which discharges it at the desired destination.

The storage conveyor, which is of the scraper type, is driven by one 75-hp. slip-ring induction motor located in the river tippie. This conveyor extends from the main or railroad tippie to that on the river bank, being supported upon a double-decked structural-steel bridge under which the storage basin and yard are located. Along the lower deck the conveyor moves from the main tippie to that at the river, while on the upper deck it returns.

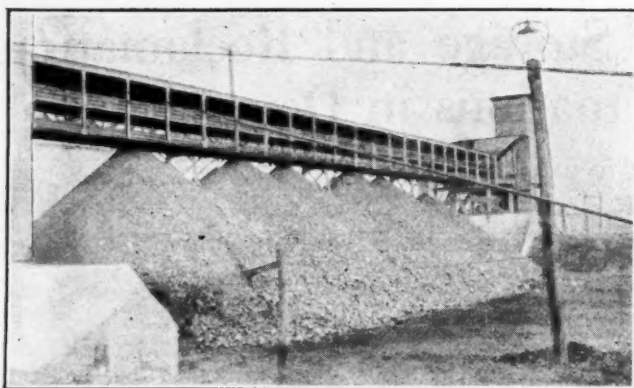
The lower trough or deck is provided with slide traps, operated by means of handwheels through racks and pinions. These are placed at such intervals that the coal can be released at various points in the storage. The upper trough is equipped with the same means for releasing the coal from the conveyor, and in addition is



SLOPE HAULAGE TO CLIFFORD TIPPLE, DILLE, OHIO

The cars are brought out of the mine by a continuous rope haul and raised by the same means to the tippie. Here the coal is dumped into a weigh hopper and then released upon an elevating conveyor.

*Manager, Electra Engineering & Construction Co.



STRUCTURAL-STEEL BRIDGE OVER STORAGE YARD

The conveyor shown on the bridge is the backbone of the whole system. Along the lower deck the conveyor moves coal from the main to the river tippie while on the upper deck the coal can be returned from storage, if that is desired.

fitted with chutes that spout the material clear of the lower deck.

By closing all the openings in the lower trough the coal is not released until it reaches the river tippie. Here are located gravity screens which allow of the usual separation of sizes. Should it be desired to remove the slack, this may be accomplished by an adjustment of the proper trap. This grade of fuel is then allowed to fall into a bin, from which it can be reclaimed through the medium of a bucket conveyor driven by sprocket and chain from the main storage conveyor. This bucket conveyor deposits its load upon the upper deck of the storage conveyor, which carries it either to storage or to the main tippie.

Coal that passes over the screens at the river tippie collects in a bin, from which it may be discharged to the weigh hopper in such quantities as are desired by the tippie operator. After weighing, this material is released to another pocket having sloped sides and a hole at the bottom through which the coal drops upon an apron conveyor, which in turn deposits it upon the river loading boom. This boom is a 90-ft. all-steel structure on which is mounted an endless belt conveyor. It may be swung up or down stream through an angle of 180 deg. and it can be raised or lowered at any angle. This makes it possible to load coal into barges satisfactorily at any stage of the river.

Coal that is to be stored falls from the conveyor into the storage basin. When this becomes filled, the material is spread out or moved to a more remote position by means of a scraper, propelled by block and cable,



SHORE VIEW OF RIVER TIPPIE AND LOADING BOOM

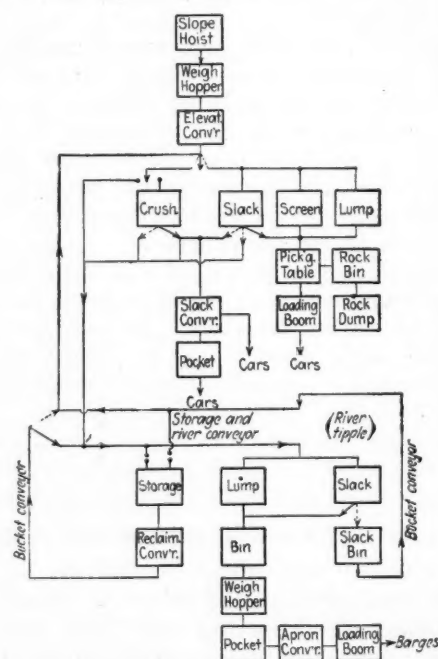
The control of this boom is vested in the weighman, who can look out of the window and see just how loading is proceeding and who by pressing a button can stop the conveyors from his position at the weigh scale. However, the barge loader can "bell" him if at any time he becomes so absorbed in his weighing that he overlooks the needs below.

from a small clutch type of drum hoist. By this same means the coal is drawn back to the basin in the process of reclamation.

The basin itself is of reinforced concrete, with sides sloped at 45 deg., outlets being placed at intervals in the bottom. The flow of coal, or its stoppage, is effected at these outlets by the manipulation of slide gates, hand-operated through racks and pinions, which discharge to the tunnel beneath the basin.

In reclaiming, the gates are opened and the coal falls upon an apron conveyor that carries it to the pocket, where a bucket elevator delivers it to a chute above the main storage and river conveyor. Here, by proper trap adjustment, it may be directed either to the lower deck of the storage and river conveyor and carried to the river, or onto the upper deck and returned to the main tippie for preparation and loading into cars.

From the preceding enumeration of the various courses that coal may take in being prepared for market—loaded onto railroad cars or into barges, stored and then reclaimed for disposition at either railroad or



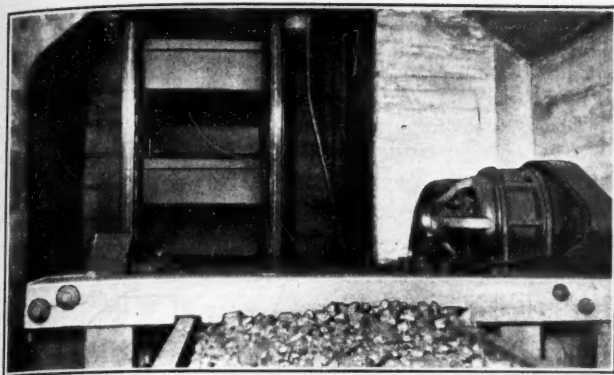
FLOW SHEET OF TWO TIPPLES AND STORAGE YARD

A conveyor works both ways when you use both upper and lower strands. It furnishes a simple and an effectual way of distributing coal. Driven by a 75-hp. motor this conveyor promptly meets all the needs which arise during the day's run. Here the river loading acts as a balance to the irregularities of railroad loading and vice versa.

river tippie—it is evident that the system developed at Clifford mine is exceedingly flexible. It is not difficult to see that coal may be so handled that while screened fuel is being loaded upon certain cars, slack may be loaded on others, or it may be placed in storage, or loaded onto barges; that both tipples may be loading at the same time and at full capacity; or that either tippie may be loading coal from the mine and from storage simultaneously. Greater flexibility is difficult to imagine.

An interesting feature in the layout of this plant is the method of starting and stopping, or in other words the control of the operation, of the various conveyors and other equipment from a remote point. This is accomplished through the agency of an electrical signaling and control system.

As all the motors required in this installation, with

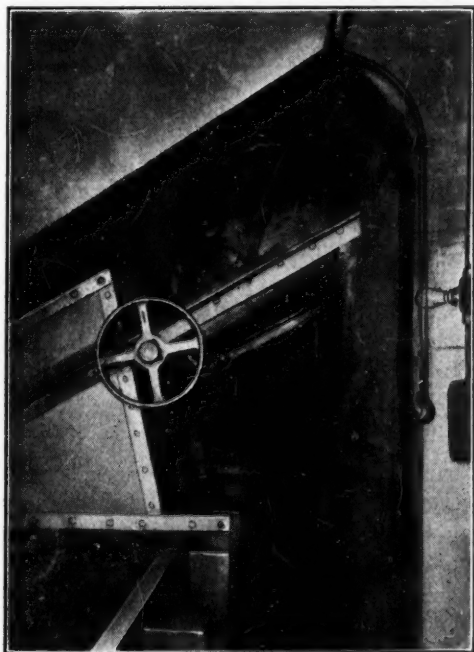


CONVEYOR RECLAIMING COAL FROM STORAGE

This conveyor carries the coal to an elevating conveyor which in turn deposits the coal upon the upper or lower span of the bridge or storage conveyor.

the exception of one, are of the slip-ring type, it is necessary, for starting and stopping, to use either a large controller which in addition to having the usual secondary contacts is provided with primary control, or to have a secondary controller and primary switch. To mount these controlling devices at or near the motor, amid the dust that invariably accumulates under operating conditions, would be highly unsatisfactory from every point of view, especially from that of the manpower required, for satisfactory operation could be obtained only by placing an attendant at each individual motor.

In order to overcome this difficulty, which would make the cost of handling prohibitive, in addition to resulting in sluggish and hazardous operation, a system was installed for controlling all the motors, with the exception of the two affecting only the river loading, from a hoist house located approximately 150 ft. from the nearest motor. Here the control is concentrated. In this manner the apparatus is freed from the injurious action of quantities of dust and dirt, and the operation of the motors requires only the part time of one instead of that of several men, for the work of handling the con-



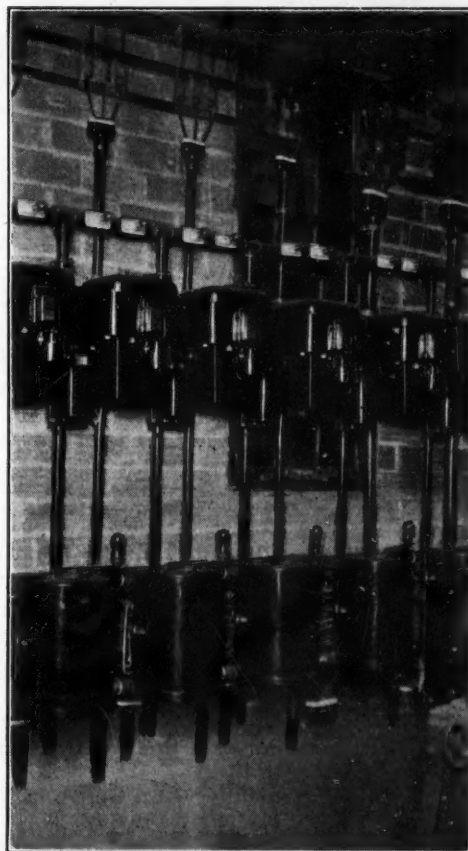
RECLAIMING CONVEYOR IN TUNNEL BENEATH STORAGE

Also shows the gate-valve mechanism for controlling the flow of coal from storage and the push-button controlling station.

trol does not add enough to the hoistman's other duties to prevent his giving them proper attention.

Power, which is 2,300-volt three-phase 60-cycle alternating current and which is stepped down to 220 volts by means of a bank of three 100-kva. transformers of the single-phase type mounted just outside the hoist-house, is brought into the building to feeder-busses and by them distributed to the various motor circuits. Each of these motor circuits is controlled by means of a triple-pole single-throw knife type of disconnecting switch as well as an oil switch that provides both undervoltage and inverse time limit overload protection.

A framework of 1½-in. iron pipe supports the oil circuit breakers and the secondary control, which consists of controllers and starting resistors. This

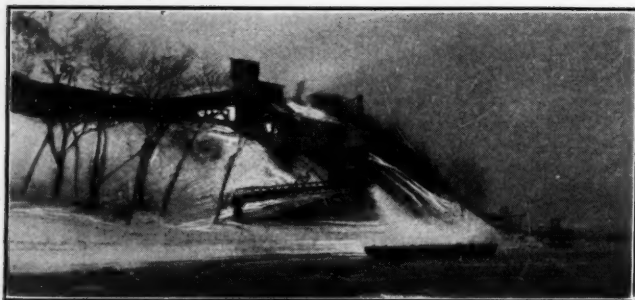


CONTROL EQUIPMENT IN HOIST HOUSE

Two lamps mounted above the oil circuit breakers are the agents by which the hoist engineer is notified. The men about the plant can signal their needs, but it is the hoist engineer that starts the motors by which the machinery is set moving. The latter does not have so strenuous a time as a shaft hoistman, for here a continuous rope haulage is installed.

arrangement adapts itself to a satisfactory grouping and mounting of this equipment. Into the supporting rack is built a system of signal lights—two above each circuit breaker—for indicating the motors to be started. At one end also is mounted an electric signal horn the purpose of which is to attract the operator's attention. From this central control point the conductors of both primary and secondary circuits are led underground, through iron conduit laid in concrete, to the main tippie and to the respective motors.

Now, with the control equipment all located at this one point, to govern the operation of motors at places anywhere from 150 to 350 ft. distant—the 75-hp. motor circuit is approximately 350 ft. in length—a series of control push-button stations has been installed at various points about the plant. These buttons have been



ANOTHER VIEW OF RIVER TIPPLE AND LOADING BOOM
As seen from the river. The whole tippie is located above the high-water mark. Coal is stored on the level ground above the steep river bank.

placed in positions most accessible to the man handling the operation. They are of such a character and are so connected to the primary circuit breakers and to the signal lamps and horn of the various motor circuits that the same button serves either as a starting signal or as a remote "stop" station.

The sequence of operations when signaling for a start is as follows: The workman at the push-button station pushes the appropriate button twice in quick succession, thereby flashing the signal lamps above the control of the particular motor to be started and simultaneously sounding the signal horn. This notifies the hoistman that that motor is to be started. He must then see that the secondary controller handle is in the "off" position. A magnetic interlock requires that he do this before he can close the primary circuit-breaker. When this is done he closes the circuit-breaker and moves the controller around in the usual manner to the full running position.

When any workman desires any motor to be stopped he presses the appropriate button once. This trips out the primary circuit-breaker, flashes the lamps, and sounds the horn. This signal indicates to the hoistman that the motor has been stopped and that he must be ready to start it when the signal to do so is given. By means of this method the motors and the conveyors driving them are sure to be started with the proper sequence of operations and with the least possible delay.

WORKMEN CAN STOP MOTORS BY BUTTON

In addition to buttons for stopping the motors and signaling for their start, each station is supplied with a button the pressing of which trips the oil circuit-breaker of the feeder panel controlling the tippie and storage-yard feeder circuit. The purpose of this provision is to allow of the complete stoppage of the entire plant by any of the workmen in case of accident.

The control of the two motors not started by the hoist operator is located in the weigh house of the river tippie. In starting these machines the weighman performs the operation in the usual manner, a window alongside the controllers allowing him to see exactly what is happening. To stop the conveyors, he need only push the appropriate button of a station located within easy reach. Pushing this button trips the circuit-breaker and stops the motor without the necessity of his leaving his position at the weigh scale. When he is weighing coal, however, he may overlook what is going on below, so a signal bell is provided in the weigh house which may be sounded at the will of the barge loader by means of a signal line and hand push button. In this same control station buttons for the main or storage and river-tippie conveyor are installed as well

as for the main storage feeder panel to which reference already has been made.

This highly flexible system of coal storage and handling, the practicability of which is made possible by the electrical layout, enables the Central Coal Mining Co. to combat to a remarkable degree the seasonal character of the industry of which it forms a part. Similar or at least comparable layouts could doubtless be installed to advantage by other coal operators.

Nine Killed and Three Injured When Windy Shot Explodes Marietta Mine

SPECIAL CORRESPONDENCE

ONE of the most disastrous mine explosions within recent years within the entire Tug River field of Kentucky and West Virginia occurred at 4 p.m. on Feb. 7, when the mine of the Marietta Coal Co., situated near the mining town of Peg, Pike County, Kentucky, on Pond Creek, about twelve miles out of Williamson, W. Va., and near Stone, Ky., blew up and snuffed out the lives of nine men and seriously injured three others.

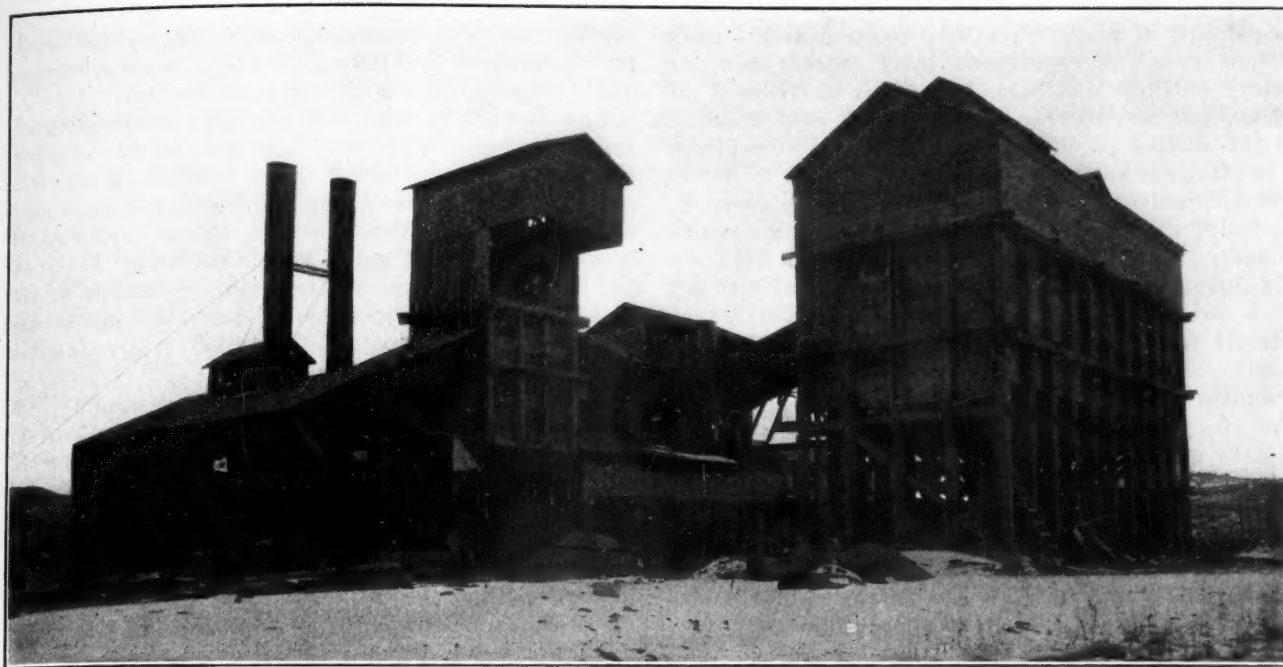
The Marietta operation, which is controlled by the Deegans interests of Huntington, W. Va., is located on the Williamson and Pond Creek Division of the Norfolk & Western R.R. The mine, a small one, employing some twenty men and producing in the neighborhood of 200 tons daily in two shifts, is developing a small acreage of the Pond Creek seam of coal. It is not electrified, and mining operations have been carried on in a small way since the plant was first opened.

The Pond Creek seam is not considered gaseous, and open lights are used at all the operations on the creek. The explosion took place as the day crew was preparing to leave the mine. Only twelve men were inside when the accident happened, the three men who were injured being near the entrance when the blast let go; otherwise perhaps every one of those within would have been killed.

The blast occurred late in the afternoon when the men started shooting the coal in the various working places preparatory to the entrance of the night loaders. As the mine employs no cutting machinery of any kind and the coal is shot off the solid it is quite possible that a blown-out, or windy, shot precipitated a dust explosion.

The interior of the mine, to which access is gained through a drift opening, was badly damaged, practically all timbers, rails and cars being swept clear of the path of the expanding wave. Volunteer mine-rescue crews, with apparatus borrowed from nearby and larger operations, entered the workings shortly after the explosion and soon succeeded in removing all of the dead and living.

This is the second explosion on Pond Creek within the last four months. On Oct. 17 the Black Diamond mine, near the mouth of Pond Creek, exploded and killed Joseph Gooslin and Otis Bracher. That blast, like that at the Marietta mine, was ascribed to an improperly charged "solid shot" which ignited coal dust. The findings and recommendations of the Kentucky Department of Mines will be awaited with considerable interest by the smaller operators in the district. It is probable that severe restrictive legislation will be enacted to make such accidents less frequent.



BRIQUETTING PLANT OF PORT SANTLEY NUKOL CO., ON NORTH SHORE OF LAKE ERIE, ONTARIO, CANADA

Ontario Establishes Another Plant for Briquetting Anthracite Fines with Crude-Oil Residuum

Methods of Drying Coal, Receiving Binder and Intimately Mixing It with the Coal—Steam Size Anthracite Brought to Plant in Summer to Avoid Freezing Difficulties—New System of Cooling Briquets

By J. B. MCGRAW
Newark, N. J.

THE initial briquetting plant of the Nukol Fuel Co., located in Toronto, Ont., began operations on Jan. 1, 1920. As from the beginning the demand for its product far exceeded the capacity of the equipment, it was at once apparent that additional plants would have to be built.

After a careful study of the market situation it was decided to place the second plant in the western part of the province. Next came the question of definite location and the selection of a site. Bearing in mind the importance of transportation facilities and an adequate storage space for raw coal, a 5-acre plot finally was selected at Port Stanley.

Port Stanley is situated on the shore of Lake Erie, which will afford the raw materials excellent water-shipping facilities. Its location also will permit the shipment of a considerable tonnage of briquets at the low freight rates obtainable by water to points on the Ontario shore. The site selected also is provided with facilities for rail transportation by way of the London & Port Stanley R.R., the main line of which extends along one side of the property. A spur has been run in and branch sidings laid so as to permit easy movement of incoming raw materials and outgoing briquets. This road serves as a feeder to four of the principal railroads of Canada: namely, the Grand Trunk, Canadian Pacific, Michigan Central and Pere Marquette; thus the

plant readily will be able to distribute its product to all parts of the province.

A subsidiary to the parent company, known as the Port Stanley Nukol Co., was organized and contracts executed with the General Briquetting Co., of New York, for the design and construction of the plant and the right to use the Dutch process of briquet manufacture. The plant is designed for a capacity of 15 tons per hour and thus by double-shift operation can produce 300 tons per day.

In briquetting the selection of a suitable raw coal is of paramount importance. To meet the exacting requirements of the trade a briquet must be equal, if not superior, in fuel value to coal of the same size. It must therefore be made of a raw material containing a minimum of ash; as a rule not over 15 per cent. An abundant source of such material is found in the river-washed coals of Pennsylvania, and the company has options upon a large supply.

To avoid the difficulties incident to the transportation of the raw coal in freezing weather a reserve of approximately 30,000 tons will be stored during the warm months for the winter's operation. This coal will be unloaded from cars or barges by a locomotive crane fitted with a grab bucket. It will be stocked in a rectangular pile adjacent to the plant. The crane also will serve as a locomotive for moving cars into and out of the plant to and from the main siding.

Binder, which in this case is a residuum obtained in

*Port Stanley is a few miles from London, Ont., and lies midway between Detroit and Toronto, at which latter city is another briquetting plant of somewhat similar construction.

the refining of crude oil, will be received at the plant in tank cars. A short spur track extends into the factory building, and here, in a space partitioned off for the purpose, the car will be housed until emptied. As the melting point is about 160 deg. F., the binder is hard at ordinary temperatures.

When received the tank cars, which are equipped on the inside with pipe coils, will be connected to a source of steam supply. After the binder has been melted to a thin liquid it will be withdrawn by means of a rotary pump and delivered to one of three storage tanks, each of which is 12 ft. in diameter by 10 ft. deep. They are built up of sections of heavy galvanized steel and have a combined capacity of 26,000 gallons.

At the bottom of each tank is a nest of 2-in. steam coils, by means of which the binder can be kept always hot and liquid. By a simple arrangement of steam-jacketed pipes and valves in conjunction with the rotary pump, the binder can be delivered directly from the car to any individual tank and an operating supply simultaneously maintained at the mixer. This obviates delay in unloading tank cars and at the same time makes only one pump necessary. The binder, being an oil product, has a high fuel value in itself, the proportion used adding more than 1,000 B.t.u. to the finished briquets.

Operation of the plant may be divided into five distinct phases: (1) Handling and drying of raw coal; (2) introduction of the binder and preliminary preparation of the briquetting mixture; (3) final preparation

of the mixture by mastication; (4) molding and pressing the mixture into briquets; (5) cooling the briquets and delivering them to the storage bunker.

Raw coal will be taken into the plant through a track hopper equipped with an endless steel apron conveyor. This discharges to a bucket elevator, which delivers into a wooden bin situated above the drier. Incoming coal, when desired, can thus be delivered from cars directly to the plant without going to the stockpile. Fuel coal for the drier and boiler plant may be handled in the same manner. A bypass chute from the top of the elevator delivers this fuel directly to a large bunker situated in front of the furnaces.

To reclaim coal from the stockpile a special self-dumping hopper-bottom car will be used that will be filled by the locomotive crane and by it placed over the track hopper. This car will hold about 50 tons and can be emptied in less than an hour. As the capacity of the plant is 15 tons per hour, this arrangement gives a leeway of two hours for filling and moving the car. In the meantime the crane may be employed in unloading other cars or in shifting empties to be filled with briquets. To make this arrangement complete, the bin above the drier was built of such size as to hold 50 tons, or a three hours' supply for the plant.

REDUCES MOISTURE CONTENT 80 PER CENT

Because of the washing process through which it has passed, the fine raw coal when received at the plant will still carry 10 to 12 per cent of moisture. To be suitable for briquetting, the coal must have its moisture content reduced by drying to about 2 per cent. A drier of the single-shell rotating type, 6 ft. in diameter and 40 ft. long, is employed for this work. The receiving end projects into a Dutch-oven type of furnace located directly beneath the wet-coal bin. The coal is delivered to the drier from the bin in a measured flow by means of an apron conveyor and a cast-iron chute, passing through the roof of the furnace. The flow of coal is accurately controlled by means of an adjustable gate attached to the bin and operated in conjunction with the conveyor. This insures that the drying will be uniform and to any moisture percentage desired.

The coal passes through the drier in contact with the hot gases and is delivered at the opposite end into a brick dust-chamber. A suction fan mounted on top of this chamber furnishes induced draft for the furnace and carries away the water vapor and spent gases. The dried coal is carried away by means of a spiral conveyor and bucket elevator and is delivered into a bin at the top of the building.

Beneath this bin is a pug mill, or paddle mixer. This device consists of a horizontal steel trough with a shaft extending throughout its entire length, to which is attached a series of blades or paddles. These are set at a certain angle with respect to the axis of the shaft and in rotating impart a positive forward motion to the material fed in at the receiving end. Coal is introduced into this machine in a uniform, measured flow by an apron conveyor that forms the bottom of the bin.

The binder, carefully measured in correct proportion to the coal by means of a specially designed needle valve, is introduced at this point. This is a highly important part of the plant, and great care must be exercised by the attendant to maintain the correct proportions. Too little binder results in a weak briquet that will disintegrate on subsequent handling, and too much binder results in a soggy briquet produced at an

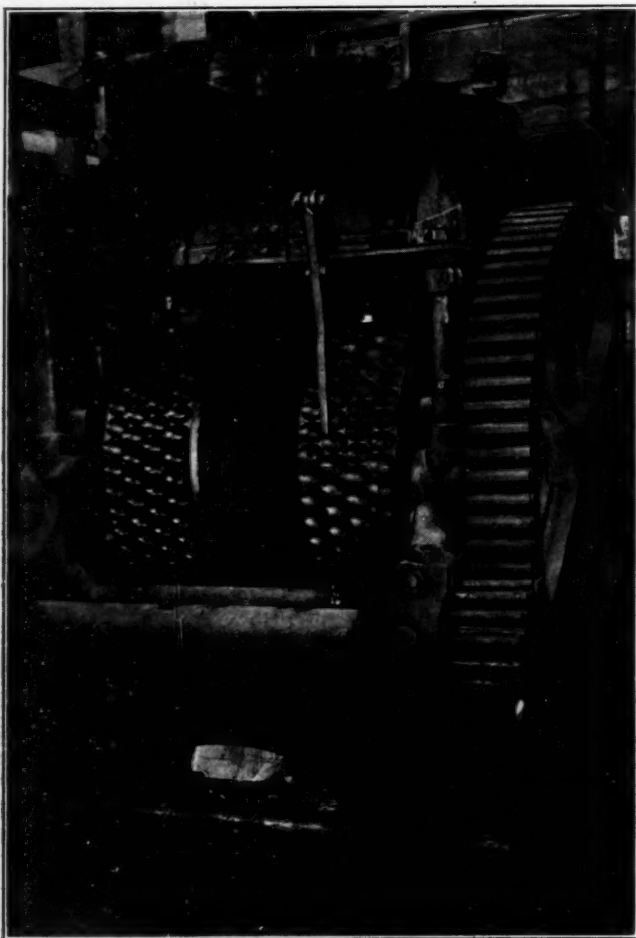


FIG. 1. PRESS FOR MAKING 4-OZ. EGGET BRIQUETS

Double rolls, 33 in. in diameter with 13-in. faces, make 368 briquets at each revolution, or 15 tons of product per hour. The rolls work two ten-hour shifts, making 300 tons per day. Each briquet is subjected to a pressure of from 1½ to 2 tons per square inch.

excessive cost. The stirring action of the paddle mixer gives a preliminary mixing to the materials preparatory to fluxing, which is the next step in the operation.

The fluxer is a vertical cylindrical steel tank 40 in. in diameter and 6 ft. deep mounted on a cast-iron base. A shaft within this container carries a series of radial arms and rotates at a uniform speed. Stationary arms attached to the inner surface of the tank project toward the center. The partly mixed material is dropped into the fluxer from the paddle mixer. Here the ingredients are further mixed, or, as it is termed, fluxed, in the presence of steam, which is admitted through openings in the bottom of the tank. This serves to moisten the mixture, or flux, as it is now called, and gives it a peculiar plasticity that facilitates the final mixing, or mastication. The flux is delivered directly into the masticator in a continuous stream, an adjustable gate regulating the flow at a rate that synchronizes with the delivery of the material into the fluxer.

FLUX IS KNEADED WITH COAL IN MASTICATOR

The next and most important step in the operation of briquet manufacture is the mastication of the flux. The masticator is a ponderous Chilean mill, or arrastre. It consists of a heavy cast-iron bed securely bolted to a massive concrete foundation, two A-shaped standards mounted on the bed carrying the steel framework that supports the drive gearing and two huge cast-iron rolls, each weighing several tons, arranged to chase around the bed at eighteen turns per minute. The flux is fed in at the outer edge of the bed and is gradually moved over by a series of adjustable plows to the center, where it is discharged.

Meanwhile the heavy rolls repeatedly passing over the fluxed material grind and masticate it to such an extent that the coal and binder are intimately mixed. In fact, the binder is literally ground into the coal, and the material has been changed into a practically homogeneous mass.

The value of this treatment can hardly be exaggerated. Without it the briquet would be a mere mixture of comparatively large coal particles partly coated with the binding substance unless an excessive proportion of binder has been used. It would consequently lack cohesion and be extremely susceptible to breakage and weathering. A briquet made from masticated material has a firm, dense structure with a hard shell-like surface. It is impervious to moisture, resists weathering and may be handled with practically no breakage.

PADDLE CONVEYOR BREAKS UP CAKED MATERIAL

Under the masticator is a conveying device, similar in design to the paddle mixer previously described. This receives the masticated flux, reduces any caking which may have resulted from the heavy pressure of the rolls and delivers it to a bucket elevator that carries it to the press.

The press is of the so-called Belgian roll type, now quite familiar to the industry. The rolls in this case are double, 33 in. in diameter and have 13-in. faces. Each has four rows of pocket molds in staggered formation, 46 molds to the row. Thus a total of 368 briquets are made per revolution. These are of egget shape, each weighing about 4 oz.

Superimposed on the press is a feed box consisting of a vertical cylinder about 18 in. deep with adjustable openings in its bottom. Rotating arms force the flux through these openings, maintaining a constant flow

to the rolls. The briquets are formed under a pressure of 3,000 to 4,000 lb. per square inch.

Dropping from the press the briquets fall directly into a bucket elevator, which carries them to a rotating cylindrical screen. The peculiar shape and arrangement of the molds cause a small quantity of material to adhere to each briquet in the shape of a rough edge or fin. The tumbling action of the screen removes this material and also eliminates occasional weak or imperfect briquets. This waste is returned directly to the masticator to be reworked.

Material to be briquetted passes through the press in a heated state, usually at 125 to 140 deg. F., and though the briquets at this temperature are strong enough to withstand the action of the elevator and screen, they are still so plastic that they would crush under the imposed weight of piling in a car or bin. It is necessary therefore that they be thoroughly cooled.

In the ordinary plant the briquets are cooled either

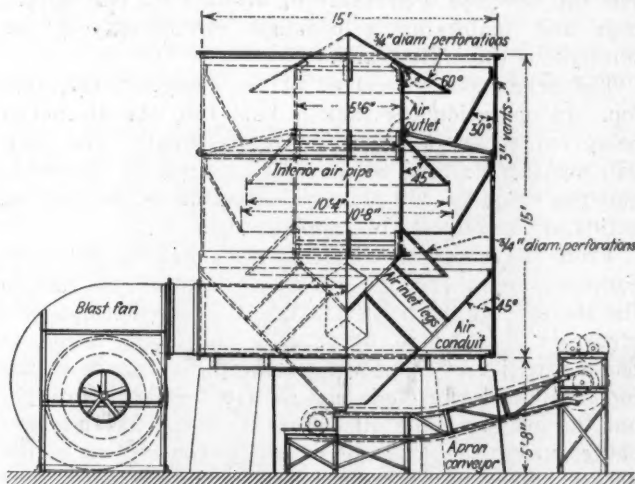


FIG. 2. DEVICE FOR COOLING AND HARDENING BRIQUETS

Air is forced into the tower down which the briquets slowly fall, being deflected by plates. The plates on the inner chimney are perforated and the air thus comes in close contact with the moving briquets, which on entering the tower at the top are almost at the temperature at which they leave the briquet press, which is between 125 and 140 deg. F.

by immersion in water or by carrying them in a thin layer on an endless chain or belt conveyor exposed to the atmosphere for a sufficient length of time to reduce their temperature to the desired point. At this installation, however, water cooling was not attempted because difficulties would inevitably be encountered in freezing weather. Briquets of the size of these give up their heat slowly and a conveyor long enough to cool them would be unduly expensive.

A new type of air cooler, Fig. 2, which I designed several years ago, was adopted as being best suited to this plant. This device consists of a vertical steel tank 15 ft. in diameter and of equal depth. It is mounted on a concrete base. Extending through the center of the tank is an interior tower, or pipe of large diameter, which serves to conduct and distribute the cooling air.

Forming the top of the inner pipe and extending beyond its periphery is a cone the projected area of which is about half the area of the main tank. In order to give the briquets an inclined descent and at the same time break up the mass into sections of small area, keeping the individual briquets in motion relative to each other, a series of plates, or cones, are provided, so arranged that the briquets pass over first one and then the other as they move downward through

the apparatus. These deflecting plates are placed alternately on the interior pipe and the exterior casing.

A funnel-shaped plate, attached to the exterior casing about 3 ft. from its lower edge and converging in the center with an opening for discharging the briquets, forms the bottom of the tank. The interior pipe is supported from this plate by four hollow legs. The annular space beneath the bottom plate is sealed and serves as a conduit for the air.

The required volume of air for cooling is supplied by a large fan connected to this annular conduit. From this chamber the air goes through the hollow legs into the interior pipe. A series of gaps, or openings, allows it to escape at points beneath the interior deflecting plates. These are perforated with many small holes, so that the air passes directly through the mass of briquets, absorbing their heat and finally escaping through vents in the outer casing to the atmosphere. The fan develops a pressure of about 1 oz. per square inch and maintains a constant circulation of air throughout the entire tank.

The briquets are received at the center of the cone top. In operation the tank is kept full, the discharge being controlled in accord with the input. The tank will hold fifteen tons, or an hour's output of the plant, and the briquets will thus be subjected to the cooling action of the air for this same period.

From the cooler the briquets are taken by an apron conveyor and thence by a bucket elevator and belt to the storage bin, or pocket. This is of wood-frame construction 21 ft. wide, 60 ft. long and 25 ft. deep. It has a capacity of 500 tons. A scraper conveyor at the top receives the briquets and distributes them throughout the length of the bin. Several so-called fish-ladder chutes under the conveyor extend to the bottom of the pocket. They lower the briquets by easy stages, thus avoiding the breakage that would be incurred by a direct drop. The briquets are drawn from the bottom and loaded on one side of the bin into cars for shipment or on the opposite side into trucks for local delivery.

PLANT MUST RUN STEADILY WHEN STARTED

Steam power is employed for driving this plant. In the preliminary plan provision was made to use electricity, but upon investigation it was found that the local power company was so overloaded that it could give no assurance of an adequate or continuous energy supply. When once started a briquetting plant should be operated without any interruption; therefore it was decided to take no chances with uncertain power.

Steam is supplied by two 150-hp. horizontal return-tubular boilers. These are equipped with the usual auxiliaries, including a Cochrane feed-water heater, utilizing the exhaust from the engine. Forced draft is supplied by a steel-plate conoidal type of fan.

A single-cylinder 22 x 48-in. Corliss engine has been installed. Power is transmitted to two main-line shafts through an "American" rope drive, Jupiter brand "Durable" wire transmission rope being used. This is a rope of special construction, being made up of steel strands, each covered with a specially prepared hemp marline. It combines the strength of steel with the flexibility of manila. It is particularly suitable in this case because the space available is hardly sufficient to permit the transmission of power by ordinary belting.

The completion of this plant marks a long step forward in the development of an industry that un-

doubtedly will have extended use in the Dominion. The middle eastern section, including the provinces of Ontario and Quebec, is the most populous of the entire country, yet is a region entirely devoid of coal resources. Anthracite is burned almost exclusively for household use and the supply is generally insufficient to satisfy the market, particularly during the winter months, when the demand is greatest and transportation facilities are at their worst. The establishment of each additional plant such as this contributes a measure of relief to this situation, and the briquetting industry of Canada should enjoy a rapid and healthy growth.

An Experience with Spraying Water on the Cutter Bar of a Mining Machine

BY JOHN CRAWFORD*

RECENTLY, after completing my inspection of one of the large coal mines of Utah, I was resting in the foreman's cabin when a machine man entered who was just going on shift. He was breathing with difficulty and I remarked that the hill up which he had climbed appeared to be hard on him and that he must be getting old. He replied: "Anybody will get old if they stay with a mining machine. I am so filled up with bugdust that I have scarcely any room left to breathe through. Mr. Crawford," he continued, "if you could get us a sprinkling hose, so we could sprinkle water on the left side of the cutter bar, you would be surprised at the effect that it would have on the dust."

Just then some other machine men came into the cabin and I questioned them regarding their experience with the spraying of water on cutter bars. They all confirmed what the first man had said.

In less than a minute after we had applied water to a cutter bar we could see and feel a remarkable change for the better. By the time the cut was within three feet of the left rib of the room the place was cool and the air clear. When the machine got to this point the hose became too short to reach the cutter bar, and while cutting the remaining three feet without water the air again became filled with dust.

We then went to another part of the mine and found a machine just ready to cut the face of an entry. We had plenty of hose with us this time and connected it to the $\frac{1}{2}$ -in. water line. This gave us an opportunity to observe the effect of water when it is applied as soon as the machine starts a run. A small stream was kept playing on the cutter bar all the time the machine was at work. When the cut was completed the face of the entry was as cool and free from dust as it was before the machine started. In both cases the water was applied to the left side of the cutter bar. This is the side on which the bits travel back toward the machine.

Every mine in Utah is required by law to have water piped into every working place that is not naturally wet. This makes it easy to get water to the coal cutters. The allaying of dust is not only beneficial to the machinemen, thus keeping desirable men on the job, but it also is advantageous to the shotfirers who must inspect the place after shooting, also to the miner who must of necessity load out the bugdust and who prefers dampened dust to dust that fills his lungs with foreign substances. Furthermore no dry dust is thrown into the air when the shots are fired, and the danger of a dust explosion is greatly reduced.

*Coal-mine inspector for the Industrial Commission of Utah.

Hoisting, Ventilation and Coal Extraction Symposia Are Outstanding Features of Institute Meeting

ORGANIZED inquiry is one of the keynotes of the American Institute of Mining and Metallurgical Engineers. There is no longer any attempt to treat all subjects with equal attention—or should it be termed equal shallowness?—but the aim seems now rather to concentrate on some few worthwhile subjects and get down to the marrow of them by hunting the information wherever it may be found and definitely deciding just where research is needed.

Perhaps it might have been well if the institute, whenever the members arrived at "No thoroughfare" signs on their journeyings, had suggested by resolution to those national bureaus which are always asking for guidance just what roads to efficient operation they would like paved and curbed for their use and convenience. Thus it was clearly evident that the Bureau of Mines would confer a boon on the mining industry if it would inquire into the life and efficiency of wire rope and continue its investigation into the coefficients of friction of the air in mine passages. But no resolution was passed to turn the aspiration into a concrete suggestion.

The one hundred and twenty-fifth meeting of the A. I. M. E. was held in the Engineering Societies' Building, in New York City, Feb. 20-23, about 1,300 persons attending. The morning of the first day was devoted to committee meetings, one on ground movement and subsidence and one on drill steel. The first proposes to make thorough inquiry into the effect of mining on surface measures, and it may clear up at last the extremely loose thinking on this subject which has been for years, and even now is, indulged in. The basis of fact is now provided, but even without it one is amazed to find that theory has blundered so blindly and wandered so far and long.

After lunch a symposium on wire ropes and hoisting, treated elsewhere in this number, was well attended by operating and safety engineers. The mining session, however, had nothing for coal-mining men.

In the evening the members met at a smoker. The Western Electric Co. had installed an audiphone which gave exhibitions of its power to transmit music over long distances. Vaudeville of the Alkali Ike variety, with a bar-room background, entertained the guests. Witty limericks written by Institute members were flashed on the screen and they with community singing helped to round out a pleasant evening.

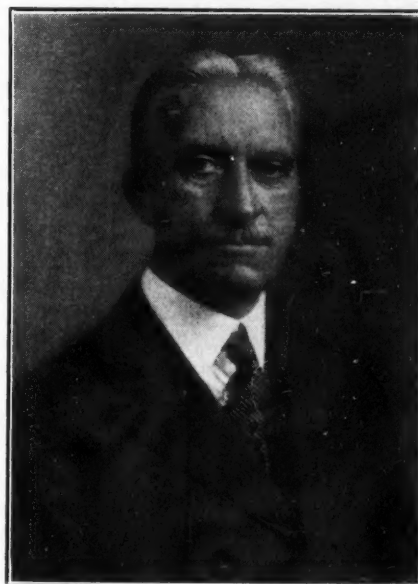
The technical sessions of the morning were preceded by the annual business meeting, at which it was announced that Arthur S. Dwight was elected president; A. R. Ledoux and J. V. W. Reynnders, vice presidents, and Charles F. Rand, George D. Barron, W. H. Bassett, William Kelly and Thomas B. Stearns, directors. Later at a directors' meeting Mr. Reynnders was elected first vice-president and Mr. Rand treasurer.

The total membership numbers 10,205, of which 19 are honorary, 7,909 full members, 951 associates, and 1,326 junior associates. During 1921 1,284 were added to the institute and 402 resigned, died or were suspended for non-payment of dues. Receipts during the year were \$198,846.56 and expenditures \$157,743.04, leaving a balance \$41,103.52. Unfortunately, the publishing of *Mining and Metallurgy*, if regarded as a free service

to members, involved the A. I. M. E. in a loss of \$8,684.96, the advertising, of course, being by no means clear gain. In fact 50 per cent and over of the advertising income was spent in printing and in selling space.

Later in the morning the safety session met to discuss ventilation. Its deliberations will be reported in a special article which will appear in this issue. The mining session considered a paper presented by Charles E. Stuart on storage-battery locomotives. As this was published in the issue of Feb. 16, pp. 276-282, and the discussion will appear in a separate article, nothing more need be said regarding this session, it being largely devoted to metal mining.

On Wednesday, Feb. 22, a mining session was held under the chairmanship of Howard N. Eavenson. At this session most of the coal papers were presented. The proceedings of this meeting will be reported next



ARTHUR S. DWIGHT

week in an article devoted to that purpose. A safety session also was held, at which papers were presented by C. W. Goodale, J. L. Boardman, C. D. Woodward and C. A. Allen. After lunch a joint meeting was held with the Mining and Metallurgical Society, at which Pope Yeatman, W. R. Ingalls and Edwin Ludlow delivered addresses.

In the evening a banquet and dance was held at the Pennsylvania Hotel, the toastmaster being George Otis Smith and the two speechmakers Edwin Ludlow and Arthur S. Dwight. The place list showed that 631 were in attendance. The following day the members visited by special train several plants between New York and Perth Amboy, the Crucible Steel Plant at Harrison, N. J., the Bayway plant of the Standard Oil Co., the Chrome plant of the U. S. Metals Refining Co., the roofing plant of the Barber Asphalt Paving Co., the cable-fabricating plant of the Standard Underground Cable Co., and the copper-refining plant of the Raritan Copper Co., the associated industries of Perth Amboy furnishing lunch at the Y. M. C. A. in that city.

Institute Discusses Safety and Life of Hoisting Ropes

Difficulties Where Rope Winds in Many Layers on Small Drums—
Factors of Safety—Great Accelerations in Coal Shafts—Shaft
Accidents and Their Cure—Can Ropes Be Tested by Electricity?

UNDER the joint chairmanship of H. F. Lunt and B. F. Tillson, and the joint auspices of the American Institute of Mining and Metallurgical Engineers and the National Safety Council, a safety session was held on Feb. 20 to discuss "Wire Ropes and Hoisting," the first paper being read by W. B. Daly on behalf of W. N. Tanner and F. C. Jaccard, who were unable to be present. It related to rope hoisting and safety in hoisting at the Butte mines. These operations, being by no means new, have certain inherent defects, as indeed the paper well recognized, but the methods adopted to meet the difficulties are only the more valuable and suggestive to those who have to meet similar conditions from which there is no ready escape.

The authors said that flat ropes from $\frac{1}{2} \times 7\frac{1}{2}$ in. to $3 \times 4\frac{1}{2}$ in. were being discarded in favor of round ropes because of the loss of alignment at some of the shafts. Other difficulties are drums of only 12-ft. diameter for 1 $\frac{1}{2}$ -in. rope and 6-ft. for 1 $\frac{1}{2}$ -, 1 $\frac{1}{4}$ - and 1-in. rope. The ropes are wound on the drums in from two to four layers. These ropes are special "Blue Center" steel ropes, either regular or lang lay, and are fastened to the cages by clamps. On the smaller drums approximately one-half of the first layer remains on the drums at all times, in order to insure the rope reeving properly, this portion being tapped into place by a light hammer while the rope is being installed, thus preparing a perfect helical surface for the reeving of the second and succeeding layers.

With 6-ft. drums the general practice is to allow one-half of the first layer of rope to remain on the drum at all times, for, because of the peculiarities of round-wire rope, this part of the first layer will not wind uniformly when hoisting the load. The first layer must wind uniformly on the drum, as, with the straight-faced drum, the first layer of rope must form the grooves for the succeeding layer, and these grooves must be uniform to guide the succeeding layers into their proper position across the drum face.

BIG FLEET ANGLE MAKES ROPES INTERLOCK

On installations using small smooth-faced drums and where the fleet angle is severe, ropes have a tendency to interlock when winding on the drum. This, together with the smaller diameter occasioned by the elongation of the rope under load, causes the groove made by the first layer of rope to be slightly less in pitch than the diameter of the rope. This causes the second and succeeding layers to be pinched together, with pronounced abrasion of the rope in service.

When installing a new rope on a smooth-faced drum it must be started so that it will wind on the drum in a true helix. To accomplish this a starting piece must be introduced at the flange where the rope is attached. For this purpose a manila-rope starting piece was used, but it was found impossible to fit this manila rope on the drum so that it would cause the rope to reeve in a true helix. Now all drums are equipped with a steel starting piece machined to exact form. This starting

piece extends completely around the drum and gives satisfactory results.

In the discussion Mr. Daly said that the speed for hoisting rock was 2,000 ft. per minute and that the Lilly safety gear was used, which he said slowed the hoist down without needless jolt. Mr. Daly said that the only danger was that, after the cage had come slowly to the dump level, the engineer might forget to reverse and on starting might pull the cage into the sheave wheel. In this case, however, the speed attained in the short distance traversed was not such as to result in much damage.

Mr. Colburn, of the Bureau of Mines and National Safety Council, wanted to know if the detaching hook was used as well as the Lilly safety gear, and was told that it was not. Rudolph Kudlich, of the Bureau of Mines, said that the Welch overwind device as now modified not only gave slow stopping but also provided against starting on the reverse.

WHY USE SMALL DRUMS AND MANY ROPE LAYERS?

Robert Peale, professor of mining, School of Mines of Columbia University, asked why large drums requiring only a single layer of rope were not used in the Butte district, as they were, for instance, in the Lake region, and why small cast-iron sheaves were used instead of large bicycle-type sheaves of 12- to 14-ft. diameter. Mr. Daly replied that the equipment used had been installed many years ago and space around the shafts prevented changes in drums.

Graham Bright said that the large rope hoist with a 30-ft. drum was excessively expensive and that the smaller drums revolving at higher rotational speeds were better suited to electric equipment.

R. M. Raymond, professor of mining engineering, School of Mines, Columbia University, then presented an interesting article on "Safety Practice in Hoisting Ropes." He stated that none of the state laws fixes a factor of safety, though the Canadian mining law stipulates a factor of safety of six in shafts less than 2,000 ft. deep, and in shafts 2,000 to 3,000 ft. not less than five. The South African commission has shown that shocks due to changes in velocity are dangerous only to short lengths of rope. The New South Wales mining law requires that a rope shall be tested before use and in hoisting mineral have a factor of safety of eight, and in hoisting men, of ten.

The factors of safety recommended by the committee framed to suggest a model metal-mining law for the United States will be found in Table I.

TABLE I. FACTORS OF SAFETY RECOMMENDED FOR HOISTING ROPES.

Length of Rope in Feet	Minimum Safety Factor for New Rope	Minimum Safety Factor At Time Rope Is Discarded	Percentage Reduction When Rope Is Discarded
500 or less	8	6.4	20.0
500 to 1,000	7	5.8	17.0
1,000 to 2,000	6	5.0	16.5
2,000 to 3,000	5	4.3	14.0
3,000 and over	4	3.6	10.0

Another table shows the rates of acceleration in various mines and the length of haul. It is interesting to

note that the acceleration in a coal-mine shaft exceeds that in all the mines with which it is compared. Prof. Raymond's table has been rearranged in Table II with the idea of listing the items according to the acceleration speed.

TABLE II. HOIST ACCELERATIONS IN VARIOUS MINES.

Plant	Shaft	Average Length of Haul, Feet	Maximum Hoisting Speed, Ft. per Min.	Acceleration, Ft. per Sec.	Distance to Reach Maximum Speed, Feet	Time to Reach Maximum Speed, Seconds
Old Ben Coal Corporation.....	Vertical	475	3,600	12.00	150	5
Great Boulder Prop., Boulder, W. A.	Vertical	2,000	2,000	5.85	95	6
Calumet & Arizona, Warren, Ariz....	Vertical	1,500	1,600	5.33	70	5
Sulphide Corp., N. S. W., Australia...	Vertical	825	3,650	5.05	300	15
United Verde Copper Co., Clarkdale, Ariz.....	Vertical	850	2,000	4.70	115	10
N. J. Zinc Co., Franklin, N. J.....	Inclined	915	3,000	3.33	375	15
North Butte Co., Butte, Mont.....	Vertical	3,600	2,700	2.53	400	17
Copper Range Co., Painesdale, Mich.....	Inclined	1,500	2,360	2.48	130	10
International Nickel Co., Creighton, Ont.....	Inclined	1,600	1,100	2.33	260	15
Republic Iron & Steel Co., Birmingham, Ala.....	Inclined	5,400	2,200	1.47	459	25
Witherbee-Sherman Co., Mineville, N. Y.....	Inclined	1,000	1,200	1.33	150	15

Though the length of hoist in the Old Ben Coal Corporation's shaft is the shortest recorded in Table II, the maximum hoisting speed in the mines listed is only exceeded by that at a mine located in New South Wales, Australia.

James F. Howe, wire and rope engineer, American Steel & Wire Co., then presented a paper on the "Use of Wire Rope in Mining Operations." He said that the objection to lang-lay rope was that so few could splice it. That was not an objection in a shaft, for the shaft rope should never be spliced. The lang-lay rope is more than usually desirable where the rope drags or rubs, as frequently occurs on an incline or on a more or less level haulage road or where several layers of rope are used on a drum. A new lang-lay rope, composed of the same number, size and strength of wires, is from 4 to 8 per cent stronger on an actual breaking test than a regular-lay rope.

A newly made rope will never show as much strength as one that has been in use for a few days under normal load. The strands in service embed themselves into the hemp center in the manner in which they are to work and in the first 30 days the rope will stretch about 1 per cent. A test of such a rope after, say, 30 days of operation will invariably show a higher tensional strength than in the original test. This gain in strength may amount to nearly 10 per cent. Some ropes that have been condemned have shown, on actual test, tensional strength in excess of their original strengths, even with several broken wires in the section being tested, substantiating the fact that the strength of a rope increases somewhat after the rope is put into service.

The author carefully discussed the various causes aging rope—exterior wear, breakage of individual wires, corrosion by acid water, alkali water or electrolysis, by loss of elasticity, by fatigue in the metal of which the wires are composed, by regular or reverse bending, by load variations resulting from shocks due to starting and stopping by overloading and by torsion at or near attachments.

He pointed out that three or four wires broken in one spot were a far more dangerous indication than twice that number spaced 2 or 3 ft. apart, even if in the same strand. The whole question of the strength remaining in a rope with broken strands simmers down

to the query: Are the breaks in the wires so distributed as to make the failure of the rope likely or unlikely? However, when one wire breaks those on either side are apt to become displaced and break in consequence, so that when wires begin to break, the rope will bear close inspection, for otherwise it may become dangerously weak.

Four or five broken wires in one place in a rope strand leave the rope unsymmetrical and in case of a shock or surge of load that strand may give way and necessitate the immediate removal of the rope. A rusty rope is stiff and the wires break quickly as they become cemented together by rust. The only remedy is to have the ropes well lubricated. No chances should be taken with a corroded rope; it is stiff, inelastic and potentially dangerous.

EVERY COMPANY HAS ITS OWN DISCARDING RULES

Aside from the number of wires broken and their distribution and the reduction in diameter, ropes may be discarded after a certain number of tons hoisted or handled, a certain number of trips made, a certain period of service or a definite number of miles traveled. It is clear that in the idle time of a rope it is by no means free from injury, for corrosion usually is more active then than when the rope is working. A well-chosen composite factor based on length of service and work in service, however, probably will give the best results.

Rudolf Kudlich, of the U. S. Bureau of Mines, then presented a paper on "Safety Devices for Mine Shafts," in which a careful analysis was made of accidents in shafts and the means by which they can be prevented. Analyzing the causes of shaft accidents in Pennsylvania, West Virginia, Illinois and Ohio in the ten years between 1904 and 1913, he had found that 199 accidents to individuals out of 1,001 (19.9 per cent), or 192 separate accidents out of 801 (24 per cent), were due to "falling down shafts," making this by far the leading cause of accident.

This type of injury and death is readily avoided by the use of shaft gates. These should be placed as near the shaft as possible and should operate in a vertical rather than in a horizontal plane, both to reduce the space required and to eliminate the possibility that the closing of the gate will sweep men into the shaft. They should be at least 5 ft. and preferably 6 ft. high to prevent men leaning or looking over them and should be strong and well braced. Springs or other cushions should be provided to reduce the jar as much as possible.

DEADLY RAIN FROM THE SELF-DUMPING CAGES

Next in importance is the risk of being struck by objects falling down the shaft. As many as 145 accidents to individuals out of 1,001, or 14.5 per cent, have been so caused. These can be prevented by keeping objects from falling and by keeping the men from coming near the shaft where these objects are likely to fall. The more modern cage dumps are so designed that the car is carried some distance from the shaft before the actual dumping period commences, so that there is little likelihood that any coal will fall back into the shaft.

The older cages dumped directly at the edge of the shaft and almost every car dumped was followed by a rain of coal down the shaft. Foreign objects falling into the shaft at the surface generally can be avoided by suitable fences and toe boards, but those falling

from timbers can be eliminated only by unfailing care on the part of shaft repair men and inspectors.

The most successful remedy is to keep the men at shaft landings out of the danger zone. This is quite possible by the use of automatic caging devices. They are of benefit in so many ways that it is difficult to understand why they are not more generally installed. From the safety standpoint the automatic device eliminates entirely the need for men working directly at the shaft when hoisting coal.

These devices usually reduce the number of men required at the landing and reduce the work they are required to do, so that they are able to keep the same pace during the entire shift. Except where a caging crew has worked together so long that the men coordinate like parts of a machine it usually happens that the speed of caging is considerably increased by the use of caging devices.

OVERWINDING THIRD IN SHAFT-ACCIDENT LIST

The class of shaft accidents which is as much feared, perhaps, as any is overwinding. It comes only third, however, in the number of individual accidents and as it involves several men where it occurs, it comes seventh in a list of accidents when tabulated without regard to the number of men involved in any one accident. Mr. Kudlich described several of the preventive devices without detailing any one in particular.

He stated that the equipment against overwinding, if desired, can be fitted with other devices by which a low speed limit is set when hoisting men, and when the surface landing instead of the dump level is made the terminal point of the hoist. This attachment must be made operative by the engineer, but as a check on him a signal light at each shaft landing automatically indicates whether it has been set.

A substantial bar or bolt slipped through a hole bored in a shaft guide a short distance above the entry level will prevent the cage descending to the landing when men are in the sump, but, as Mr. Kudlich shows, this would not have prevented all the 105 accidents caused in the states mentioned in the decade between 1904 and 1913, men being killed while crossing the sump instead of going round by the passageway, by falling or slipping into the sump while caging cars or by being pushed or falling while trying to get on the cage to ascend the shaft.

GATES RARELY PLACED ON COAL-SHAFT CAGES

Pointing out the general use of cage gates in metal mines and their almost universal absence on the cages of coal-mine shafts, Mr. Kudlich said that the metal-mine cages being small and the number of men carried large, gates were the more necessary to prevent men being crowded off. The state laws in coal-mining states limiting the number on a cage to ten or twelve acted as a safeguard but that they are not sufficient is proved by the fact that 179 were killed or injured by falling off the cage or being caught between the cage and the shaft timbers.

The accidents were due to jostling or playing when riding on the cage or to attempting to get on or off the cage after the signal to hoist had been given. Bars and chains may assist in promoting safety in the hoisting, but they do not prevent men from trying to enter or leave the cage after it has been "rung away."

The danger in sinking, which may not be termed by some a mining hazard, because the work usually is done

by a contractor and not by the mining company and because it is frequently not under the control of any mine inspector, consists largely in the crosshead or "billy," a simple wooden frame traveling between guides which steady the rope and keep the bucket from swinging. The crosshead usually simply rests on clamps on the rope, so that the rope is free to pass through the crosshead if the latter is kept from descending. Should the crosshead stick on a lump of ice or a tight place in the guides it may be held back temporarily and then when the bucket has lowered many feet it may work itself loose and fall, breaking the rope or attachment. For this possibility protection has been devised. A catch is introduced which automatically grips the rope and locks the crosshead and rope together, except when the former is resting on the stop locks at the foot of the guides and the grip on the rope is released.

In mines where coal or other mineral is hoisted from several levels the cage may run into landing fans or keeps which the foot tenders have not removed or the engineer may forget to which landing he is to lower the cage. One large anthracite company has a movable mark on the indicator dial of the hoist which shows which level is being served at the time and it also has red and green lights on the target to indicate the position of the keeps at each landing. The landing keeps and car blocks at each level are interlocked, so that the keeps must be withdrawn to set the safety block protecting the shaft.

SHAFT ROPES SELDOM BREAK WHEN HOISTING MEN

The average mine worker dreads the breaking of a hoisting rope more than any other accident that may occur in a shaft, yet only four times in ten years in the states covered by Mr. Kudlich's compilation did a rope break while men were being hoisted. Safety catches are not always reliable, especially if the rope breaks near the drum, in which case there is a degree of tension on the rope and the catches are not effective or act only so as to slow down the fall of the cage. The rope usually breaks between the cage and head sheave, however, and in that case the catches should come into effective action.

To render absolute protection under these conditions, some radical changes from the present mine-cage safety catches must be made. The elevator manufacturers have practically solved this problem, but their devices are more complicated than the mining man thinks are necessary—one or more additional ropes in each shaft are required and the entire operation depends on niceties of clearance, alignment and working fits that are difficult to maintain under the severe conditions existing in mine shafts. The office-building type of passenger elevator with metal guides, speed governor, etc., has been installed as a man hoist at mines, but in only a few instances.

In commenting on these papers, H. F. Lunt, Commissioner of Mines of Colorado, said that while splicing of hoisting ropes was permitted in that state for the raising of minerals, the hoisting ropes by which men were raised must not be spliced. Mr. Howe recommended that ropes be not spliced when used in either shafts or steep slopes.

Mr. Lunt asked if any investigations had been made into electrical tests of wire roping. He understood that parts of a rope which broke in service in one of the shafts of British Columbia had been tested in this manner, the corroded and broken wires resisting the passage

of the current. This seemed a possible way of testing ropes in service, for it revealed any weakening that might result from corrosion, severing of strands and reduction of area.

B. F. Tillson, general superintendent, New Jersey Zinc Co., said that he would caution his hearers against the use of an internal drum for the purpose of taking up excess rope without absorbing any part of the space provided in the hoisting drum for that purpose. He had placed such a drum on one of his hoists and found the rope was soon nicked where it passed to the hoisting drum. As a result he was never able to use the extra rope he had provided. In reference to slope rollers he said he had used a soft rubber roller between two steel flanges and had found it quite desirable. Idlers with ball bearings he had found unsuitable. They spun so persistently after the rope had passed them that they were still spinning—and in the wrong direction—when the rope returned.

In Mr. Tillson's viewpoint the factor of safety was largely a factor of ignorance. He thought we had not explored the subject thoroughly or we would be using a smaller factor. Why not find the limits of variation in strength and the limits of starting stress and all the many factors which tend to shorten and destroy the rope's life and then, having scientifically allowed for all ascertainable stresses, use a factor of safety far less large than with the rough-and-ready methods we are now obliged to adopt?

He advocated also that the speed of hoisting planes be not limited arbitrarily. He believed a greater speed should be allowed where good tracks were provided. What is over-safe speed on a good road may be an extremely unsafe speed on one that is poorly laid and maintained. Why should good equipment have a handi-

cap placed on it equal to that placed on the poor equipment that the less progressive firms are installing?

Mr. Tillson said that he had found that head sheaves in time became fluted and argued that this action subjected the ropes passing these flutings to torsion. The torsion is greatest near the end of the rope, the twist being carried backward to that end as the rope is pulled over the head sheave. This is why it was well to have a swivel coupling at the cage.

Mr. Tillson further stated that before the war Mr. Burroughs, of the Bureau of Mines, was co-operating with the New Jersey Zinc Co. in an investigation of ropes. War conditions stopped the inquiry and after the war the condition of the industry made it advisable not to resume an inquiry that had so large an element of scientific altruism. In this investigation the ability to test ropes electrically had been considered.

Graham Bright asked if the factor of safety was based on the static stress on a straight rope or took into consideration the stresses resulting from acceleration, which might be equal to half the dead load.

Rudolph Kudlich said that the Illinois operators in speeding up their hoists had been obliged to increase the diameters of their ropes considerably. Their 5- or 6-ft. head sheaves were too small for the work required of them, lowering the actual factor of safety and shortening the rope life.

Robert Peale, professor of mining, School of Mines, Columbia University, said that, owing to the severity of the starting stress and the lack of elasticity in a short rope, the factor of safety for a rope in a short shaft should be greater than for a rope in a deep shaft. Furthermore there is the oscillation of the rope to consider, which is a more important factor where the free rope is short.

Fayette County Mining Institute Discusses Qualifications of Mine Superintendent

THE Fayette County (W. Va.) Mining Institute held its regular monthly meeting Feb. 11 in the Y. M. C. A. building at Mt. Hope. This meeting was well attended. The following officers were elected: Thomas Donelson, president; Robert J. Holmes, secretary-treasurer; Robert Lilly, first vice-president; J. F. Hindson, second vice-president; L. Pepper, third vice-president; members of Executive Board, Messrs. Albert Angus and J. S. Mason.

John Mallabone served as president of this fast-growing institution for the years 1920 and 1921, during which time he never failed to present himself at the meetings, regardless of weather conditions. He served in his official capacity with exceptional efficiency and to the entire satisfaction of all.

When taking the chair Thomas Donelson made a short address which was most favorably received. He commented upon his predecessor's record and stated that he would endeavor to maintain the standard set and keep the institute growing.

Among the subjects discussed were: What are the principal causes contributory to fires? interpretation of the latter part of Section 63 of the West Virginia Mining Law, and a system of mine inspection that would tend to prevent mine fires.

A paper presented by R. G. Poff, and read by the secretary, entitled "Co-operation Comes Through Leadership," stirred up more comment than the previous subjects mentioned. It brought out pent-up feelings concerning unsatisfactory methods of employing men ignorant of mining and placing them in the position of mine superintendent to dictate to a foreman qualified and certified as competent by the State Board of Examiners.

One short extract from this paper is as follows: "Occupations of every kind present their own peculiar problems.

One bone of contention in coal mining in most cases is the fact that the superintendent is not required by law to take an examination or hold a certificate of competency, as is the foreman under him. The certification of the mine superintendent would be a step forward. Weekly visits of the superintendent throughout the mine will do more good than all the office meetings ever held and will stimulate a better working spirit."

Papers for the next regular meeting, in March, to be presented by Messrs. Angus, Ward, Roncogline, Hindson and Holmes, all will be on different subjects. A committee of five was appointed to establish a mining library in connection with the institute and to get in touch with other organizations of a similar character for the exchange of papers and pamphlets.

A friendly rivalry exists between the Fayette County Mining Institute and the Raleigh County Mining Institute for supremacy in membership. Thus far it is conceded that Fayette County has the lead, but the Raleigh County organization is making the race interesting.

J. J. FORBES, COAL-MINING ENGINEER of the Bureau of Mines, is collecting data for the preparation of a bulletin on sampling and analyses of Alabama coals. This bulletin will give information regarding the coals of the Birmingham district. One hundred and forty-nine face samples of coal have been taken in thirty-four mines in Alabama, representing fourteen different coal beds.

AT THE CENTRAL DISTRICT STATION of the Bureau of Mines, Urbana, Ill., a study has been made of the inhibiting effect of finely divided fusain or mother coal on the coking property of Illinois coal. Coking tests were made on coal containing up to 10 per cent 200-mesh mother coal without any appreciable deleterious influence being shown.

Book Reviews

More Power for America

AMERICA is full of power—fairly bursting with it. That is her only defense for the prodigal way in which she has wasted her resources and is wasting them today. Coal is going, oil is half gone, and water power, vast as are its potentialities, is not the all-sufficient bulwark the overzealous have pictured. Yet 50 per cent of the power the country produces still effects an easy escape, while the power available in the earth's crust is tapped with intolerable recklessness. But the country is beginning to realize vaguely that these things are so. That is the one relieving touch in this drab picture painted by C. G. Gilbert and J. E. Pogue in their new book, "America's Power Resources" (Century Co.).

The book is a sort of composite of the notable Smithsonian Institution pamphlets these two men of vision and deep insight published after exhaustive researches. They have written an absorbing, popular story, tracing the nation's power resources back to geologic beginnings, describing the efforts America makes to put those resources to work, the appalling losses suffered in the process and what the writers think should be done about it.

These two trained observers find that our entire energy situation is unsound. Natural gas and oil producers are compelled to pump for dear life from the time they tap until they exhaust a deposit, all unmindful of the state of demand, for unless they do so, the well adjoining will suck out all the riches under their feet. Oil properties should be developed by whole regions, the authors believe; not by small units. The same sort of integration in soft-coal mining would be of vast benefit. With a broad basic plan to work on, the operators of mines would not merely take the "easy" coal, leaving half the deposit untouched and useless to mankind. Government restraint, the authors note, has prevented beneficial big-scale development such as has marked the progress of every other truly American industry. The authors hope, with Senator Kenyon, that coal will some day come to be regarded as a public utility, removed from the realm of destructive competition, and be subject to public oversight, thus gaining the advantage of co-operation and integration with the dangers of monopoly safeguarded by "proper governmental regulation."

They hold the theory that integrated coal mining under proper limitations will reduce waste both of coal and of the human element, stabilize production, adjust supply and demand, lessen transportation and hold the centers of coal production longer in their present spots, to the advantage of existing distribution of industrial activities. However, it cannot be expected to lower coal prices to the consumer, they explain. To effect that, far-reaching changes in coal utilization alone will meet the situation. The familiar George Otis Smith chart illustrating the fact that 1,924 pounds of coal out of each ton is wasted during conversion into mechanical energy is evidence that there is pressing need for such changes.

The new deal which the authors envision for the mining and consumption of coal would save, they calculate, more than a billion dollars a year in needless mining and transportation, besides adding to the value of products recovered from coal \$280,000,000 in nitrogen, \$300,000,000 in benzol and \$100,000,000 in products made from benzol and tar. These figures add up neatly to the stupendous total of about two billion dollars, which might be applied annually to reduce America's cost of living about \$20 per capita.

America must be roused to the necessity of extracting—and using—these byproducts down to the last pound. She must realize that anthracite—always a luxury because its mining and transportation costs are high—cannot hold its

own as a chief domestic fuel, but that "artificial anthracite" can largely take its place.

The ideal condition, as the authors see it, is for all of a community's bituminous coal to be purchased and consumed on a centralized basis at city gas plants converted into modified byproduct plants and with a centralized distribution of all the products—gas, ammonia, benzol, tar, and "artificial anthracite," a non-cellular carbonized product more easily controlled and more satisfactory all around than coke for house fuel.

"It is not beyond the bounds of reason," say the authors, "to foresee a condition whereby a householder, in place of his ton of anthracite which he now welcomes for \$11 (\$14 now), will receive a ton of smokeless coal without slate, a month's supply of cooking gas, forty miles of motor fuel, enough fertilizer to start a small garden and tar sufficient to allay the dust in front of his house—all for less money than he now pays for inferior coal."

When the 500,000,000 tons of coal now improperly utilized each year are made to yield up their all, when vast quantities of coal are converted at the mines into electrical energy, when the railroads are relieved of a congesting volume of raw fuel freight, when national sentimentalism and high interest rates on hydro-electric investments cease to hamper water-power development and when the government sweetens its "spirit of blind antagonism" toward co-ordination in industry, then, the authors believe, the nation will make full and happy use of its unparalleled fuel resources.

F. R. Wadleigh's Coal Manual

FOR a mixture of elementary and advanced coal lore the beginner can do no better in the present state of our literature than turn to Wadleigh's "Coal Manual" (National Coal Mining News, Cincinnati). From a preliminary dissertation on coal and civilization the author (who, by the way, writes from a personal knowledge of many years in many lands in nearly every contact with coal, from firing a locomotive to directing the foreign sales policy of a coal exporting house) takes us through the intricacies of coal sampling, analysis, and purchase on specification, to the practical theme of efficient use.

To those who seek the elemental facts about coal as coal this booklet is recommended; some of the older hands in the business can learn from Mr. Wadleigh's chapters on use of coal. To those who may acquire this book we hasten to add that the contents are even more promising than the book in which they are found.

Lifting the Mystery of Briquetting

MUCH of the "mystery" of coal briquetting is torn away by the authors of the Mashek Engineering Co.'s Catalog No. 5, which covers the subject of coal briquetting, machinery and plants in a straightforward, clear manner. The first 56 pages of this handsome book are of a character to warrant designation as an engineering report or a text book on the theory, history and practice of briquetting, besides containing data on the size and cost of plants and of the manufacture of fuel briquets.

Particularly interesting is the chapter on binders, in which the merits of each known substance suitable for binding coal particles into solid fuel are fully set forth.

Significant at this time—because of the work now being done by the Bureau of Mines—is the comment on briquetting of lignite. It is stated that the "problem of converting practically any low-ash lignite into a fuel equal to Pennsylvania anthracite in heating value has been solved."

AT THE PITTSBURGH STATION of the U. S. Bureau of Mines a series of tests has been made to determine the relative steaming values of coke as compared to anthracite and bituminous coal when fired by hand into a large low-pressure boiler suitable for heating a large building. The results are now being compiled. Many special temperatures were read and samples of gases analyzed to explain the variation in efficiency in burning these fuels.



Problems of Operating Men

Edited by
James T. Beard



Mixing Salt With the Stemming, in Blasting

Salt Used With Good Effect in Arkansas Mine—Two Methods of Distribution Employed—Dummy of Salt Placed in Hole Next to Charge—Tests Show Dust So Damp as to Be Plastic

HAVING had some five years experience in the use of salt as a medium for collecting moisture from the mine air and thus dampening the dust that collects on the gob and in the roadways, in mines, I was deeply interested when reading the inquiry of "Engineer," *Coal Age*, Jan. 26, p. 172.

The mine in which we have been using salt for this purpose is located in Sebastian County, Arkansas, where we are mining what is known as the "Hartshorne seam." This coal approximates very closely, in analysis, to the Pocahontas coal of West Virginia.

The mine is considered a very dry and dusty mine. All the coal mined is shot off the solid, with black powder, except in a few instances only, where permissible powder is used.

In the early part of 1917, two explosions occurred in this mine, both of which were caused by windy shots. In each case, the explosion was propagated very widely, throughout the mine workings, by the coal dust that filled the roads and waste places in the mine.

At the present time, we occasionally have windy shots occur, in blasting the coal; but no propagation of the explosion now results. We feel that this fact is due, in a very large measure, to the practice we have adopted of using salt to dampen the dust, in the manner that I will describe.

HOW SALT IS USED AND DISTRIBUTED

The grade of salt used is that known as "No. 4." It is bought in carload lots and shipped to the mine where it is sacked in most any kind of sacks. For convenience of handling, however, it has been found that the sacks should contain about 100 or 150 lb. of the salt.

At one time, we adopted the method of loading the salt directly into a mine car and scattering it along the entries and in old rooms, by means of shovels. Particular attention was given to scattering the salt around the partings, where coal falling from the cars produced an excessive amount of dust.

While we found that the salt scattered in this way would collect the moisture from the air and keep the dust damp, the method proved ineffective to some extent, because there were often wide spaces where there was no salt, and the dust that collected in such places was a menace to safety.

Later, the plan was suggested of using the salt as a part of the stemming when tamping holes, in blasting, as mentioned in the inquiry to which I referred. This method has since proved so effective for scattering the salt, in old abandoned rooms where it is impossible to sprinkle with water without laying pipe lines, the plan is still in use.

So effective has the method of distribution proved, not only in scattering the salt in the gobs, but on the ribs and timbers on the roadways, that it is now the regular custom to supply each miner with a bag of salt, which he keeps at his tool box where he makes up his dummies and powder cartridges.

SALT DUMMY NEXT TO POWDER

The regulations in this mine, now require each miner to make one dummy of salt, which is about 12 in. long and 2½ to 2¾ in. in diameter, that being the size of the augers used there. This salt dummy will contain from three to four pounds of powdered salt and, as each miner shoots from three to four holes a day, there is scattered in his working place from nine to sixteen pounds of salt each shift.

The salt dummy is placed next to the powder cartridge where it is found to have a maximum effect in preventing the projection of flame from the hole when the blast was fired. We believe that the salt does have this effect on the flame that would otherwise be produced, but are unable to state this as a fact. I want to endorse the suggestion already made, in the reply to this inquiry, that the Bureau of Mines make an investigation to determine if the salt has an extinctive effect on the flame of a shot, in blasting coal.

TESTS MADE TO PROVE SUCCESS

Several tests have been made, at our mines, to prove the efficiency of this use of salt. For example, in making such a test, a room was selected that had been driven in from 50 to 100 ft. from the entry, without the use of salt. At this point, salt was introduced and made part of the stemming of each shot fired in the place, after the manner I have described.

The result was watched with interest and it was found that, within three or four days, a slight dampness on the gob and ribs was noticed. Again, in from

ten to fifteen days, the dust became so damp that it could be wadded up in the hand and would retain its shape. This dampness was noticed everywhere in the gob and on the ribs and timbers of the place. It was also observed to extend, to some extent, into adjacent rooms where no salt had been used.

By the use of salt, in this manner, we have been able to dispense with sprinkling in some parts of the mine where it was formerly necessary to wet down the ribs and gob with water. We believe that these results warrant a much wider use of salt than now prevails in dry and dusty mines.

Huntington, Ark. SUPERINTENDENT

Another Letter

FROM the reading of the inquiry presented by "Engineer," *Coal Age*, Jan. 26, p. 172, it would seem that he is seeking for a method of reducing the flame of blasting to a minimum and wants to find out if salt is effective for that purpose.

Such a use of salt is new to me, as I have never seen it used when tamping a shot. We are all familiar with the use of calcium chloride, or salt, for the purpose of dampening the dust on the haulage roads, in dry and dusty mines. This practice was in use at the Gallatin mine of the Pittsburgh Coal Co., at Monongahela City, Pa., where I worked. In that mine it was found that either salt or calcium chloride gave better results than came from the use of water, for sprinkling the roads. The dust was kept in a moist or damp condition, by reason of the water absorbed from the air by these chemical salts.

DOES MINE LAW FORBID USE OF SALT?

In regard to the use of salt in stemming when blasting coal, it occurs to me that the mine law would not permit of such practice. I am not familiar with the law in Illinois; but the bituminous law of Pennsylvania states plainly that the hole must be tamped with clay or other incombustible material.

In my judgment, where nothing but permissible explosive is used and all shots are examined, charged and fired by shotfirers, there is little need of using other material for tamping a hole than the clay I have mentioned.

My experience is that where shots are fired, in compliance with the law in Pennsylvania, little flame is produced by the blast and what follows the cracks or crevices in the coal where it is broken loose by the force of the shot and its heat thus dissipated.

If coal dust is used in tamping a shot I can readily believe that, either calcium

chloride or salt mixed with the dust, would have a beneficial effect in quenching the flame that would follow the firing of the shot. On the other hand, when stemming a hole with clay it does not seem to me that the salt would have any effect, unless the shot blew the tamping from the hole.

In answer to this inquiry, my advice is to use the salt for dampening the dust accumulated in a working place where shots are fired. Then, tamp every hole with incombustible material and use only permissible powder.

Mayport, Pa. JAMES THOMPSON.

Spiral-Separator Plant

Spiral separators now in use in many coal-producing states and in Canada—Tests made of samples of the coal before installation—Occasionally a coal is found requiring other treatment.

MY attention has but recently been called to the article of Benedict Shubart, of Denver, Colo., which was originally read at the June meeting of the Rocky Mountain Coal Mining Institute and reproduced in *Coal Age*, Oct. 20, 1921, p. 631, treating incidentally on the separation of coal from its impurities.

While Mr. Shubart has not expressed his opinion regarding spiral separation fully or specifically, he says he questions the commercial success of such an installation. We naturally desire to refute this statement with a brief reference to our experience in the bituminous coal field.

On page 633 of his article, Mr. Shubart says, "A number of devices are in use for automatically cleaning the mine product, but so far none has been found practical under existing conditions. One mine is now preparing to spiralize its coal. Spiralizing demands the separation of the material treated into a large number of even-sized fractions. Furthermore, the coal must be even texture and substantially dry. I question the commercial success of this installation."

SPIRAL SEPARATORS IN USE

In the first place, allow me to state, for the benefit of many who are interested in the economical separation of coal in its preparation for market, that we have supplied Spiral Separators to companies in Alberta, Canada, New Mexico, Alabama, Illinois and many other places.

As is the case with all coal separators, we occasionally find a coal that we cannot handle. For this reason we request samples to be sent us, so that we can inform the companies of the results that can be obtained with spirals.

In the last few months, we have tested over a dozen samples of bituminous coal from England; and in nearly every case have obtained a good separation. We have since received over two dozen samples sent by companies from all over the bituminous coal fields of England. At each of these collieries, there are several different veins of coal.

Regarding the commercial success of spiral separators, we take pleasure in quoting the following letter, which proves more than anything we could say:

OLD BEN COAL CORPORATION

McCormick Building

CHICAGO, ILL., May 2, 1919.

Mr. F. H. Blatch, Supt.,
Anthracite Separator Co.,
Hazleton, Pa.

DEAR SIR:

We are very glad to give you the following data concerning our experience with your separators, citing the instance of our No. 9 Plant at West Frankfort, Franklin County, Illinois.

Our No. 9 Mine Spiral Preparation Plant, which is equipped with sixty Anthracite Separator Co.'s spiral separators, handles sixty per cent of 5,000 tons, normal capacity of the mine, or 3,000 tons in eight hours. This is at the rate of 6.25 tons per hour, per spiral, which could be considerably increased without detriment to quality of preparation.

The plant is operated by one foreman and ten men, not including the men loading out coal on the tracks. Of these men two are easily able to attend the spirals, the others taking care of the screens, conveyors, motors, etc.

The results are entirely satisfactory as impurities are removed more thoroughly than by washing, without the drawbacks incident to the latter process. Our preparation is made entirely over dry spirals.

Five sizes are prepared, ranging from 6x3 furnace down to 3x3 pea coal.

We can positively state that we know of no method of preparation of coal that we would consider as even approaching spiral separation, for our purposes.

OLD BEN COAL CORPORATION,

D. W. BUCHANAN, President.

We would also like to add that the spiral separator can be run either wet or dry.

F. PARDEE, JR.,

Manager, Anthracite Separator Co.
Hazleton, Pa.

Theory of Coal Formation

In situ theory of coal formation disputed—Facts cited in support of coal being formed under sea water.

MY ATTENTION has but only now been directed to an article that appeared in the issue of *Coal Age* for January 5 (page 8), on the deposition of coal beds in sea waters. The article is written by H. W. Hixon and interested me particularly, being written in support of a theory I have always regarded as more probable than either the *in situ* or the "drift" theory of coal formation.

It was about twenty-five years ago that the *Engineering and Mining Journal*, then edited by R. P. Rothwell, published an article of mine, presenting the same hypothesis as that set forth in this article to which I have just referred. In the previous article, I pointed out the absurdity of assuming that our coal beds were the only exception to the general rule of Paleozoic strata being invariably ocean deposits.

Permit me to cite a few instances in support of the theory that the coal formations are, in reality, ocean deposits resulting from the action of immense deltas, in former ages. The

facts I am about to mention are the results of my own observation.

In the No.-2 gas bed, at Powellton, W. Va., I found a petrified lepidodendron, about 18 in. in diameter, standing nearly vertical. This specimen was unflattened and rooted in a 50-ft. conglomerated sandstone. It passed upward through 3 ft. of slate forming the floor of the coal bed; then, through 6 ft. of coal, including a 4-in. slate parting near the middle of the seam. Continuing upward, the specimen I am describing passed through 2 ft. of slate roof, into a 40-ft. overlying ledge of sandstone.

The tree had evidently been anchored by a heavy root and the strata, in the order named, deposited around the trunk, by the ocean water acting as a jigger. More than 6 ft. of this lepidodendron was taken out and stood in front of my office, where I left it in 1890.

EVIDENCE DISPROVES OTHER THEORIES

To my mind, this is alone sufficient to refute the accepted inland-lake theory of the formation of coal. However, to further substantiate the idea that our coal beds are ocean deposits, about 1917 I found a piece of tide-worn crystalline quartz, about the size and shape of an ostrich egg. This specimen was found in the center of a small bed of coal in Fayette County, West Virginia. The smooth rounded form of this specimen could only have resulted from wave action. There was no disturbance in the sedimentation of the coal roof or floor, and the rounded pebble must have been carried, by the rushing torrents of the delta, out to the deeper waters beyond, where it was deposited.

Dr. White of the Geological Survey, informs me that he has placed this specimen in the Smithsonian Museum under my name. Another specimen collected in my rambles is a coral, about 1½-in. in length, taken from a local thickening of a sandstone parting, in the No.-2 gas bed, at Ansted, W. Va.

In my previous article, published in *Engineering and Mining Journal*, I assumed that, in Paleozoic times when the North American continent was submerged, there existed a large tropical continent, which is now submerged and of which Central America and the West Indies are remnants.

HUMID CLIMATE OF EARLY AGES

The climate, in those ages, was more humid than our present climate; and it is probable that rivers much larger than the Mississippi or the Amazon discharged enormous quantities of tropical vegetation northward into the ocean, where it remained afloat until its specific gravity exceeded that of the water. In that condition, it would be jiggered into position, by river or ocean currents, and deposited in the same manner as the shales and sandstones.

Again, Dana refers to a species of spider found, in the coal beds, at the 85th parallel. He states positively that the spider could not live in any

temperature below 66 deg. F., making it probable that this spider was transported there, from the tropics, by ocean currents.

Discounting this idea of transportation of the spider, we must assume that the axis of the earth has changed since Azoic times, or near the end of Paleozoic times. There is no other alternative if we accept Dana's statement that the spider could not live at a lower temperature than that named. We assume, of course, that the sun was the source of heat, then, as now. That being true, a minimum temperature of 66 deg., on the 85th parallel, would require more than 212 deg. F. at the equator.

W. N. PAGE.

Washington, D. C.

What Constitutes a Solid Shot?

Solid shot determined by line of least resistance approaching axis of hole—Loose-end shot may be solid when charge is too far away from that end.

THERE seems to be considerable doubt, in the minds of some writers, as to what constitutes a "solid shot." In his letter, *Coal Age*, Dec. 22, p. 1016, Edward H. Coxe appears to hold the opinion that a shot properly mined, or a loose-end shot cannot be called a "solid shot."

On the other hand, according to his statement, some mine inspectors and insurance inspectors, in Pennsylvania, hold to the opinion that a loose-end shot is a shot off the solid. Now, in my humble opinion, a shot on a loose end, or one that has been mined or sidecut, may still be a solid shot.

SOLID SHOOTING DEPENDS ON THE POSITION OF CHARGE

To make my meaning clear, let me say that the question of a shot being "solid" depends wholly on the position of the charge and the line of least resistance. If the line of least resistance corresponds more or less closely to the axis of the hole I consider such a shot a solid shot.

For example, when shooting a loose end a greedy miner may drill a 6-ft. hole, at a distance of, say from 7 to 12 ft. away from the loose end. Or, where the shot is mined or sidecut, the same miner may locate his charge too far from the mining or shearing.

In either case, the distance from the charge to the face of the coal is shorter than the distance to the loose end, or to the back of the cutting. The result is, as every practical miner will agree, the shot will blow its tamping; or, perhaps, it will blow out a funnel-shaped hole in that direction.

To my mind, the Bituminous Mine Law of Pennsylvania, defining blasting should prescribe that the line of least resistance shall not be in the direction of the drillhole; but make a substantial angle with the axis of that hole, in order to insure the coal being broken down without danger of the shot blowing its tamping.

In other words, the reading of the law should make it plain that the dis-

tance from the charge to the loose end or back of the mining or cutting must always be a considerable less than the depth of the hole.

My idea is that a drillhole should never be farther from the shearing than the depth of that cut; and the hole should never be pointed away from the cutting but inclined toward it. In shooting a loose end, the distance from

the back of the hole to the end of the coal should be considerably less than the depth of the hole.

It has always been my practice to never grip a shot when shooting a loose end, but drill the hole to a depth greater than its distance from the end of the coal and in a direction about at right angles to the face of the coal.

Frederickstown, Pa. JAMES F. GAMILLE.

Inquiries Of General Interest

Power to Drive Fan at Constant Speed When Mine Resistance Is Increased

Fan Driven by Electric Motor at Constant Speed—Less Power Consumed as Mine Resistance is Increased—Power Remaining Constant, Fan Will Run Faster, Under the Same Conditions

KINDLY answer, in the columns of *Coal Age*, the following questions regarding which different opinions have been expressed by two prominent mine foremen, each of whom are equally well versed on mining matters. The question can be stated as follows:

Assume the air-courses in a mine are 1,000 ft. in length, from the intake to the discharge opening. The mine is operated by a fan driven by an electric motor, and it is desired to maintain a constant speed of the motor and the fan.

Now, assuming that the length of the air-courses has increased, in the development of the mine, from 1,000 ft. to 5,000 in length, the question is, Will more or less power be required, in that case, to operate the fan at the same speed as before? As far as the question of power is concerned, the quantity of air circulated in the mine is immaterial. The point in dispute is, Will the increased development of the mine require more or less power, in order to operate the fan at the same speed as before?

In debating this question, we will say, a Pennsylvania mine foreman claims that to maintain the same speed of the fan under the increased development of the mine will require a greater power. On the other hand, let us say a West Virginia mine foreman maintains that the power required to operate the fan at the same speed will be less and less as the development of the mine is increased. Which of these gentlemen has the right understanding; for I must confess it is beyond my knowledge.

REFEREE.

Pa.

This question has been a frequent subject of debate, in mining circles, and one in which the opponents often re-

quire that a practical test be made, before either of them will be convinced. It is similar to the question of whether the setting open of a mine door dividing the main intake and return airways, at the bottom of a shaft, will cause the fan to run faster or slower, under the same power; or, maintaining the speed of the fan constant, will more or less power be consumed?

The answer to this question is that the setting open of a main door, at the shaft bottom, short circuits the air at that point and cuts off the mine resistance, which has the effect to cause an increased flow of air through the fan. The result is that a larger amount of work is absorbed and lost within the fan, and less power is therefore available for turning the fan, which will run slower, under the decreased resistance of the mine.

The reverse of this is also true; namely, the fan will run faster as the mine resistance is increased, assuming that the power remains constant.

On the other hand, to maintain a constant speed of the fan when the door is set open at the bottom of the shaft will require an increase of power. In other words, more power is required to operate a fan at the same speed, under a decreased mine resistance; and less power will be required to produce that speed under an increased resistance to the flow of air through the mine.

Now, applying these facts to the solution of the question under debate, as has been stated the quantity of air in circulation is immaterial, as far as the question of power consumed is concerned. The development of a mine increases the mine potential, which is its resisting power, and, here also, for a constant speed of the fan, the power consumed will be less as the development of the mine is increased. Therefore, we give our verdict in favor of the West Virginia foreman.

Examination Questions Answered

Alabama First-Class Examination Birmingham, Jan. 23-26, 1922

(Selected Questions)

QUESTION—*What qualifications are necessary to make a successful mine foreman, other than those required by law?*

ANSWER—The successful mine foreman must be a good judge of human nature and be able to handle men in a manner that will secure their good will and hold their respect for his authority in the mine. His practical experience must be such that will enable him to judge correctly what constitutes a day's work and to know when work is well performed. He must give his entire attention to the supervision of the mine and maintain a constant daily output of coal, at a minimum cost.

QUESTION—*What is the object to be attained by requiring the mine foreman to visit the working places every day when the men are at work?*

ANSWER—By visiting each working place every day when the men are at work, the foreman will keep himself informed regarding the safe condition of the mine and the manner in which the men perform their work. He will be better able to judge of the future requirements of the mine and know what supplies are needed, and whether these are being wasted or used to best advantage. Better discipline is maintained in a mine where the foreman is continually in touch with his men.

QUESTION—*What is the principal object of ventilation in coal mines? Should there be as much air, per man, in a non-gaseous mine, as is generally required in a gaseous mine?*

ANSWER—The chief object of ventilation is to keep the mine in a safe and sanitary condition, by sweeping away the gases that would otherwise accumulate in the workings, and furnishing pure air for the men. A mine generating gas in appreciable quantity will generally require more air, per man, than a mine that is free from gas. Most mining laws require from 50 to 100 per cent more air, in the ventilation of a gaseous mine, than what is required in other mines.

The matter of chief importance, however, is the velocity of the air current at the working faces, which must be such as to sweep away the gas generated. To produce this velocity, a somewhat less quantity of air must be circulated in a thin seam than where the coal is thicker. On this account, the quantity of air, per man, is not the determining factor in every case.

Also, the number of men employed being greater in some mines than in others, that must be taken into account when deciding on the volume of air required to make a mine healthy and safe.

QUESTION—*Is it proof of good ventilation, in a gaseous mine, when a very rapid current of air is passing through a small airway? Give reasons.*

ANSWER—A rapid air current, in a contracted airway, is no sign that the mine is well ventilated. The quantity of air in circulation is determined by the product of the velocity of the air current and the sectional area of the airway. Good ventilation requires that a sufficient air volume is entering the mine and that this air is conducted in sufficient quantity to the working faces. The entire volume of air must be divided between the several districts of the mine, so that the desired quantity, per man, will be furnished in each district at a moderate velocity.

QUESTION—*State why, in your opinion, the pressure or water gage increases as the workings are extended, other conditions remaining the same?*

ANSWER—As the workings of a mine are extended, the rubbing surface is increased, which increases the frictional resistance of the mine and the pressure or water gage required to circulate the air. Both the pressure and the water gage are determined by the velocity of the air current and the amount of rubbing surface, per square foot of sectional area.

QUESTION—*If it becomes necessary to stop a fan for repairs, how will you keep the mine clear of gas in the meantime? What precautions should be taken before stopping the fan?*

ANSWER—A mine ventilating fan should never be stopped and the men permitted to continue at work in their places. In case of a sudden breakdown of the fan, all the men should be promptly withdrawn from the mine and not permitted to return to work, until after the repairs have been made and the mine has been examined and reported to be safe for work.

In a small drift mine ventilated by an air shaft on the hill, it may happen that there will be a considerable natural ventilation provided by the air column in the shaft, after the ventilating fan has ceased to operate. Even in that case, however, it will not be safe to permit the men to remain in

the mine when the fan is not in operation. The fact that a fan is required to properly ventilate the mine shows the need of withdrawing the men if the fan, for any reason, is stopped.

QUESTION—*In a mine working 312 miners, 49 daymen and 22 mules, how many cubic feet of air, per minute, does the Alabama mining law require in circulation?*

ANSWER—There are, in this case, $312 + 49 = 361$ men and 22 mules, at work in the mine. The mining law of Alabama requires a circulation of 100 cu.ft. per min., per man, and 500 cu.ft. per min., for each mule in the mine, making the required air volume, in this case, $361 \times 100 + 22 \times 500 = 47,100$ cu.ft. per min.

QUESTION—*What are the dangers attending the presence of an excessive amount of fine coal dust in a mine and what remedies should be employed to lessen the danger of its presence?*

ANSWER—Danger arises from the fine coal dust being blown into the air, in blasting; or raised and carried in suspension in the air current, by the various operations performed in the mine. The presence of the dust renders the air explosive when ignited by a flame of sufficient volume and intensity.

In order to lessen this danger, no accumulations of dust must be permitted at the working faces and on the roadways or traveling ways. To prevent the dust from being thrown into the air an efficient sprinkling system has been installed in many mines. Also, the use of salt, on the roads and other passageways, has been found of advantage in keeping the dust in a damp condition. In some mines where the coal is blasted, salt has been mixed with the stemming, in tamping the holes, and this has been found an effective means of distributing the salt at the working face when the shots are fired. A good method is to make a dummy of salt and place this next to the charge of powder when charging the hole. The hole is then tamped with clay or other incombustible material. It is claimed, also, that the salt has an extinctive effect on the flame of the shot.

QUESTION—*What precaution should be taken in entering an abandoned mine?*

ANSWER—When entering such a mine extraordinary care should be used to detect any gas that may be present. An open light should not be used; either an electric cap lamp or an approved safety lamp should be employed. One should proceed slowly and watch carefully for any possible effect that may be produced on the system, by breathing the air in the mine. On first observing any weakness or difficulty in breathing, one should always withdraw promptly to fresh air. It is always wise to carry, on such occasions, caged mice or birds that will give warning of the presence of carbon monoxide in the air. If this is not done, frequent tests should be made with a proper gas detector designed for that purpose.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

ON the whole, the figures received by the Department of Commerce in its "Survey of Current Business" during the two weeks ended March 3 further emphasize the progress which business has made, compared with six months or a year ago. Nearly every industry shows slow and steady improvement and returning confidence.

The increase in the price of farm products is having a far-reaching effect upon industry in general. Current reports reaching the Department of Commerce indicate that the trade of mail-order houses and of other distributors, largely dependent upon rural patronage, is already feeling this improvement.

In the textile industry figures previously reported showed that both cotton and silk consumption increased in January, compared to the preceding month. Wool consumption, however, the figures for which have just become available, shows a decrease from 64,200,000 to 61,973,000 lb. in January; nevertheless, this figure is still more than double the consumption in January last year.

Exports of iron and steel in January amounted to 157,000 tons, the largest since April of last year. Exports of copper totaled 53,130,000 lb., which was a decrease of over 8,000,000 lb. from December. Imports of tin increased to 8,103,000 lb., larger than for any month of 1921.

Exports of both bituminous and anthracite coal declined. Bituminous exports, at 644,000 tons, were only a little more than one-fourth as large as a year ago.

Petroleum production in January reached a new high level of 43,326,000 barrels, which, accompanied by heavy imports and decreased consumption, brought the amount in storage to 195,444,000 barrels, the largest so far recorded for any month.

Newsprint-paper production declined slightly in January, but, with the exception of December, is the largest for any month since April, 1921. Exports of newsprint increased nearly 60 per cent, reaching a total of 5,073,000 lb., and exceeding any month in 1921.

Contracts awarded for business and industrial buildings increased over December, both in floor space and in value. All other classes of building showed a slight seasonal decline. Residential buildings contracted for in January total 18,083,000 sq.ft., valued at \$75,728,000. This is by far the largest amount of residential building ever recorded for January. Indications point to a big increase in building operations this spring.

Practically every lumber association reports an increase in production over December. A portion of this increase is seasonal, but, compared with January last year, there is a very marked increase.

Exports of wheat, including flour as grain, amounted to 14,985,000 bushels in January, which is a further decline from preceding months. Exports of corn and corn meal, on the other hand, increased 9,000,000 bushels over December, reaching a total of 19,437,000 bushels.

With the exception of farm products, price index numbers showed a tendency toward lower values in January. In most groups this was limited to one or two points. The Department of Labor's wholesale index for all commodities dropped from 149 to 148 in January.

Due to the heavy drop in retail food prices the cost of living index, compiled by the National Industrial Conference Board, declined to 158, compared with 161 in December and the high point of 205 reached in July, 1920.

Freight Loadings Recede Slightly

Cars loaded with revenue freight during the week ended Feb. 18 totaled 780,924, compared with 788,412 during the previous week, or a reduction of 7,488 cars, according to the American Railway Association. Observance of Lincoln's birthday was no doubt a contributing cause to the decreased loading. The total for the week was, however, an increase of 88,917 cars compared with the corresponding week last year and 8,822 cars above that for the corresponding week in 1920. Coal loadings totaled 190,700 cars, 1,467 less than the previous week. This was, however, 43,296 in excess of the same week in 1921 and 19,292 greater than the total for the corresponding week in 1920.

Unemployment Falls in Cleveland

Industrial employment in Cleveland continues to improve. The Cleveland Chamber of Commerce Committee on Labor Relations in its latest monthly survey shows that men are going back to work in nearly all of the city's largest industries. The numbers employed are the greatest they have been since last May and very little smaller than they were during February, March and April. One hundred of the city's leading factories which normally employ 500 or more, reported 73,158 persons on their payrolls Feb. 28, as compared with 69,352 on Jan. 31.

Cadillac Plant Speeds Up

Orders from all parts of the country for Cadillac cars are being received in such volume that it has been necessary to increase the working force at the company's factory to a total of 7,000, very near the high water mark for this division of General Motors. Officers of the company announce that the organization is now on the largest production schedule in its history, greater by 20 per cent than is usual at this time of the year.

Steel Workers Return to Work

Several hundreds of idle steel workers returned to work last week with increased operations in the steel mills of the Youngstown district. The Trumbull Steel Co., of Warren, resumed operations on a 100 per cent basis, the first mill in the district to reach capacity since the depression began. Open-hearth steel products have reached more than two-thirds of capacity, with the Carnegie Steel Co., a Corporation plant, operating fourteen of its fifteen furnaces.

D. L. & W. Places Repair Order

The Delaware, Lackawanna & Western R.R. has placed an order for the repair of 500 cars with the Berwick Car Works, Berwick, Pa.

German Mines Now Produce Nearly as Much Coal as Before the War

GERMANY'S coal year 1921 was a strained one. Bituminous production during the first ten months surpassed that of 1920 by 5,000,000 tons and brown coal output during the same period exceeded that of the previous year by 10,000,000 tons, thus putting the country back practically on a pre-war basis, but production is not the country's big problem. The impending division of the Upper Silesian fields worries Germany because she fears she may lose a valuable fuel source. That is one difficulty. Another is the question whether German coal rates are to be raised to stop "giving" France and Belgium vast sums each month in low coal charges. Last is the question: How soon is the Entente coal tribute to be lowered? All these harassments worry the German coal industry as it moves into 1922, a year of uncertainty.

Total output during 1921 was: Bituminous coal, 136,209,000 metric tons and lignite, 123,000,000. The Ruhr district produced 94,115,000 tons of bituminous coal; Upper Silesia, 29,644,000 and all other districts, 12,450,000 tons.

The changes in output since 1913 may be seen in the following figures, from which the production of Alsace-Lorraine and the Saar mines is deducted.

COAL PRODUCED IN GERMANY, 1913-1921

1913.....	174,090,000 tons	1918.....	158,630,000 tons
1914.....	149,250,000 tons	1919.....	107,529,000 tons
1915.....	137,157,000 tons	1920.....	131,340,000 tons
1916.....	146,865,000 tons	1921.....	136,210,000 tons
1917.....	155,160,000 tons		

Production in 1921 was still below that of the war years, with the exception, perhaps, of 1915. The increase since 1920, although in itself not very important, shows decided progress, as the extra shifts which were run in 1920 during ten months came to an end in the middle of March, 1921. On the other hand, the early parts of 1920 were marked by several large strikes and riots, which caused a loss estimated at 4,000,000 tons.

Improved conditions are most pronounced in the Ruhr district. The total production of this district in 1921 was only 20,000,000 tons behind that of the record production of 1913, while the total of the whole of Germany fell short of the latter by 40,000,000 tons, after making allowance for the loss of the Saar district and Alsace-Lorraine.

OUTPUT AUGMENTED BY INCREASE IN WORKMEN

The gain in output is largely due to the increased number of workmen. In the Ruhr district 560,000 workmen were employed at the end of 1921, compared with 533,000 at the end of 1920, showing an increase of 27,000, the larger number of which were employed on the surface. The reduction of the working time from 8½ to 7 hours is chiefly responsible for the fact that the increase of unproductive labor is higher than that of the men working below.

Production in Upper Silesia in 1921 fell short of the preceding year by 2,000,000 tons. In the main this was due to the riots which took place in connection with the plebiscite. Despite the large increase of men employed, production was nearly by 26 per cent below that of 1913. Progress, however, is noticeable compared with 1919, when the total production of Upper Silesia was 26,000,000 tons.

Lignite output in 1921 totaled 123,000,000 tons, or 11,000,000 tons more than during the preceding year. Since 1913 production has increased 36,000,000 tons.

The production of coke in 1921 was 28,000,000 tons, compared with 25,000,000 in 1920 and 32,600,000 in 1913. Of briquets of bituminous coal 5,900,000 tons, and of lignite 28,000,000 tons were produced.

In the supply of fuel a certain stringency is again noticeable, due to increased industrial activity. This is most pronounced in the case of the higher grades, caused by the sharp differentiation now exercised by industry as well as by the reparations coal. The mines are not making sufficient provision for changed conditions although urged to do so by the government as well as the market.

Attempts to raise the coal production by opening new shafts were peculiarly absent during 1921, as in previous years. A start in this respect was only lately made by the Thyssen combine, which has commenced operations for the

sinking of several new pits, three of them with double shafts and two with single shafts. As a whole, opinion as to whether new shafts are profitable is strongly divided, the majority of mining concerns maintaining that productiveness is quite out of the question, as the cost of a double shaft plant, including the necessary workmen's dwellings, is over 200,000,000 M.

The countries drawing on the Upper Silesian coal production are Austria, Poland, Czecho-Slovakia, Italy and Hungary. By the division of Upper Silesia, of the 61 mines in existence, 49½ mines fall to the share of Poland, while 11½ remain German. The Polish mines yield 77.5 per cent of the total production, while only 7,000,000 tons per year, or 22.5 per cent are produced by the German section. If Germany is unable to come to an agreement with Poland with regard to the production of the lost Upper Silesian mines, she will sustain a loss of 6,000,000 tons per year.

While during the last six months the usual hue and cry directed against the coal tribute under the Spa treaty was nearly silenced, owing to eased conditions, it is again becoming a topic of the day. Monthly shipments of coal under the Spa treaty averaged 1,500,000 tons of bituminous coal and 100,000 tons of brown coal briquets. The increased activity of the industry having produced a certain stringency in the coal situation, the government is again urged to take steps to have the coal tribute reduced.

The loss of the greater part of the Upper Silesian mines is providing a further argument for this movement. Men like Stinnes believe the only remedy is to raise the domestic coal price to the level of foreign prices. He figured out that from 200,000,000 to 240,000,000 gold marks are simply given away to France and Belgium by keeping the domestic price so far below the world market standard. The damage sustained by Germany, he says, is much larger, however, as the cheap German coal puts the iron industry in France and Belgium in a position to outrival the German iron industry in foreign countries.

GOVERNMENT RELUCTANT TO RAISE PRICES

The government, however, is by no means willing to raise prices in view of the enormous effects a rapid increase would have on the price of all other commodities. Prices have recently been raised 40 per cent to 50 per cent in the case of bituminous coal, and 30 per cent for brown coal, and the tendency is not to go further without pressing reasons. This is evidenced by the abandonment of the contemplated increase of the coal tax to 40 per cent.

In the course of this year exports of coal have increased from month to month, reaching in September 650,000 tons, or 25 per cent of the pre-war average. The imports in September were 120,000 tons, or 15 per cent of the pre-war average. These imports are chiefly bunker coal for harbor towns, and hardly penetrate into the interior of the country.

The general opinion with regard to the coal situation in Germany after the part detachment of Upper Silesia, is that in times of slack business the home production is just sufficient for the requirements of the country, while during times of increased industrial activity even under normal business conditions, it falls short. If production cannot be increased, exports of coal, even reduced as they now are, cannot be maintained. An increase of imports, however, is becoming more and more probable.

COAL-MINING CORPORATIONS to the number of 1,581 which reported a net income for the calendar year of 1919 had an invested capital of \$1,175,891,538. Their net income was \$98,912,336, or 8.41 per cent. They paid income tax amounting to \$8,390,535 and war profits and excess profits tax to the extent of \$9,255,479, making their total tax \$17,646,014. These figures are contained in an official statement issued Feb. 20 by the Bureau of Internal Revenue of the Treasury Department. The 1919 tax returns have been compiled with unusual care, owing to insistent demand by Congress for more definite information about taxes being paid by industrial corporations. The total number of coal-mining companies making returns for 1919 was 3,228. Of this number, 1,581 had net incomes and 1,647 had no net income. The latter had deficits aggregating \$23,748,807.

Rail Officials Oppose Cut in Coal Freights; Say It Would Have Little Effect on Prices in General

WELL-DEFINED opposition to a rate reduction on coal was manifested by railroad officials in their closing statements to the Interstate Commerce Commission in the freight-rate investigation. They took the position that a coal freight-rate cut would not be reflected in a corresponding reduction in the cost of articles into the manufacture of which coal entered. They gave comparisons of a 10 or 15 per cent rate cut on coal itself and on the articles manufactured in which coal played a part, showing that the coal-rate cut would yield less benefit to the consumer than a direct cut on the manufactured article itself.

T. C. Powell, of the Erie R.R., said the relationship of freight rates to the mine price of anthracite was less in 1921 than in 1913, 1914 or 1916. He declared that if the coal rates were reduced 10 per cent the railroads would have to haul 20 per cent more coal in order to earn a satisfactory revenue.

After the commission concludes consideration of statements of interested parties it will proceed to study the evidence with a view to formulating a decision. In the consideration of rate reductions it is said that the commission will first consider the coal rates.

The Colorado Metal Mining Association and other mining interests of that state asked that the coal and coke rates from producing centers to the metal mines and smelters be materially reduced.

The main argument against coal-rate reductions was made by H. A. Cochran, coal traffic manager of the Baltimore & Ohio R.R.

Replying to various witnesses representing shippers who have contended that a reduction in freight rates on coal is essential to the stimulation of business, Mr. Cochran told the commission that almost any reasonable reduction that could be made would hardly be reflected in selling prices. Estimating the average consumption of coal at 5.35 tons per household, Mr. Cochran estimated that a 10 per cent reduction in freight rates would mean an average saving to each householder of only \$1.21 a year. He continued:

Exhibits filed by shippers with the commission show that the freight charges on a ton of coal from Athens, Ohio, to Detroit, Mich., is \$2.47 per net ton. In constructing an automobile whose factory price is approximately \$1,000, these exhibits show that about two tons of coal is used. The freight charges on this would be \$4.94. The exhibits show that the freight charges on an automobile from Detroit to Athens would be \$24.83. A reduction of 10 per cent in the freight rate on coal used in constructing the automobile would result in a reduction in the cost of 49¢. A 10 per cent reduction in the rate on the automobile would reduce the cost to the consumer by \$2.48.

In like manner we find that a 10 per cent reduction in the rates on coal from Fairmont, W. Va., to Allentown, Pa., would reduce the cost of producing a barrel of cement slightly over 3¢, while a reduction of 10 per cent in the rate on cement from Allentown to Fairmont would reduce the cost to the consumer by 7¢; a barrel of cement would result in a saving in the production cost of lime of 7¢ per ton, while a reduction of 10 per cent in the freight charges on lime from Pinesburg to Somerset would result in a reduction in the cost to the consumer of 26¢ per ton of lime.

A 10 per cent reduction in coal rates would reduce the cost of producing a ton of copper 38¢, while a reduction of 10 per cent in the rate on copper would reduce the cost to the consumer by 76¢.

Reports of the U. S. Bureau of Census for 1914 shows the value of manufactured products to have been a little over \$24,000,000,000. In that year the bituminous coal production (422,000,000 tons) was but slightly greater than in 1921. Exhibits already filed show that the coal transported by railroads and used in steel plants, byproduct coke ovens and other industrials amounted to 40.2 per cent of the total production. The bituminous coal produced in 1921 was about 407,000,000 tons; 40.2 per cent of this would be 163,614,000 tons. Freight charges on this at an average rate of \$2.27 per ton would be \$371,403,780. The present index number of the Bureau of Labor Statistics is about 150. If the same amount of products was manufactured in 1921 as in 1914, the value would be over \$36,000,000,000. The freight charges on coal used for industrial purposes would therefore be but slightly over 1 per cent of the total value. A 10 per cent reduction in bituminous coal rates would be equivalent to but 1/10 of 1 per cent of value of products.

Exhibits filed by the shippers show that the increase in bituminous coal rates on coal shipments to pulp mills averaged \$1.96 per ton, or less than 1/20 the average increase in the price of paper.

So far as we can find from the record, not one shipper produc-

ing manufactured articles through the use of coal has gone on record as agreeing to translate a rate reduction on coal into a reduction in the selling price of his manufactured articles.

A 10 per cent reduction in coal rates on steel products would reduce the production cost only 64/100 of 1 per cent and a 15 per cent reduction would reduce the cost by less than 1 per cent. It is not believed that so slight a reduction would be reflected in the selling prices to the railroads.

A reduction of even 15 per cent on coal rates would mean a saving on pig iron of only from 23¢ per ton in the Pittsburgh district to 76¢ per ton in the Chicago district.

Congress at Loggerheads with Navy Over Expenditures for Fuel

CONGRESS seems to be at war with the navy over its expenditures for coal and other fuel. For several years since the war the House Appropriations Committee has tried to get the navy outlay for fuel reduced to the pre-war figure of something around \$5,000,000 a year. During the war its fuel bill ran up to thirty odd millions a year. Last session the House cut the navy fuel allotment down to \$17,500,000 and a deficiency item of \$12,500,000 was requested by the navy at the special session last autumn. During hearings then the navy officials in charge of fuel were severely criticised for exceeding the appropriation made and the navy withdrew the deficiency estimate.

This session the navy sent in a modified estimate for a \$12,000,000 deficiency to tide the navy over until June 30, when the fiscal year expires. The House Appropriations Committee, under the guidance of Chairman Madden, of Illinois, who is seeking a record as a saver, cut the navy estimate practically in two and in reporting the deficiency bill to provide for funds for the balance of the year gave the navy \$6,282,685.

Considerable local publicity was given to the cut by navy officials, who pointed out that it would practically require its vessels to anchor at sea, as the present fund was exhausted. Mr. Madden, however, defended the action or the committee, saying that the country looked to Congress to cut appropriations and that government departments should keep within appropriations. He said the deficiency funds allotted would allow the navy \$1,225,000 for fuel for the balance of the year and that it would be sufficient for all proper functions of the navy. The House voted the funds as reported by the committee with but little debate, Representative Hicks, of New York, a member of the Naval Committee, being the only member to inquire as to whether it would enable the navy to conduct the usual maneuvers. Mr. Madden said they had been cancelled by the navy and that naval vessels could be docked as well as cruise needlessly around.

J. E. McCoy Resigns Coal Secretaryship After 12-Year Tenure of Office

J. E. McCoy tendered his resignation as secretary-treasurer of the Southern Appalachian Coal Operators' Association Feb. 24 at a meeting of the executive committee at the offices of the association in the Holston National Bank Building, Knoxville, Tenn. The resignation was accepted and became effective March 1.

Mr. McCoy completed 12 years' service in that office Feb. 9 and was one of the best known and most popular of the bituminous coal association secretaries of the country, among whom he has a host of friends. When he accepted the secretaryship the association included twenty-two coal companies producing 2,000,000 tons of bituminous coal annually. Its membership now numbers approximately 100 companies producing normally from 6,500,000 to 8,500,000 tons of coal a year.

Mr. McCoy has not announced his plans. He left for New York City Wednesday, March 1, expecting also to spend a few days at Atlantic City.

Hultman Warns Massachusetts Mayors of Likelihood of Coal Strike

IN a memorandum relative to the coal situation, addressed to Mayors and other city officials of Massachusetts, Eugene C. Hultman, Fuel Administrator of that state, calls attention to the likelihood of a strike. Both the bituminous and anthracite coal miners, he says, threaten to strike on April 1, and the mine owners state that a strike is inevitable. "In reply to my request for information, Herbert Hoover, Secretary of Commerce, also advises, 'The stage is well set for a strike on April 1.' In my opinion this most aptly describes the present situation.

"The wage scale of the unionized bituminous coal miners expires April 1 and strike rumors have been emanating from both miners and operators. However, the bituminous fields are only partly unionized and there has been much part-time work or unemployment during the past year. Bituminous coal prices at the mine mouth have dropped from \$10 in 1920 to \$2.50 per ton at the present time.

"Bituminous coal from non-union fields can be produced in sufficient variety to satisfy all industrial and domestic requirements. Many operators and trade organizations claim that the production from these mines will be equal to the demands of the country under 1922 conditions of industrial and railroad activity. If there should be a strike, the region supplying New England will be called upon to supply some coal to consumers located in the Middle and Western states. Foreign export demand, however, which played such an important part in 1920 "profiteers' orgy," is now a negligible factor; in fact, large quantities of foreign coal are now available for import.

THREE MONTHS' SUPPLY OF BITUMINOUS COAL ON HAND

"According to the latest report of the U. S. Geological Survey, January, 1922, users of bituminous coal in New England had on hand about a three months' supply. New England receipt figures for January and February show an increase over any previous months since June, 1921.

"Labor in anthracite mines is highly unionized; the mine owners also are strongly organized. The miners have had steady employment at war-time wages during several years. In addition, the laws of Pennsylvania provide that anthracite can be mined only under the supervision of a 'boss miner,' who is licensed by the state and who must have served at least a two-years' apprenticeship in a Pennsylvania anthracite mine to be eligible for examination. The price of anthracite coal (stove size) at the mine has increased from \$4 in 1914 to \$8.10 per gross ton at the present time.

"The anthracite producers have informed me that they believe there will be a suspension of production in the anthracite fields due to a strike, vacation or walk-out, for an indefinite period after April 1.

"The economic movement for lower prices will compel producers of anthracite to reduce the present price. Anthracite is at present prices a 'luxury' fuel, and the difference existing between bituminous selling today in Boston at \$8.25 per ton delivered and anthracite, with lower heat value, at \$15 must be reduced, or bituminous coal will displace anthracite in this section of the country. Most of the domestic fuel requirements of the West and Middle West are now being supplied by bituminous coal.

"Domestic anthracite coal deliveries and stocks as of Feb. 1, 1922, in Massachusetts and metropolitan Boston are set forth in the following comparative tables compiled by this office:

DELIVERIES, STATE OF MASSACHUSETTS (In Net Tons)

Coal year—April 1, 1920, to March 31, 1921.....	5,207,643
Ten months—April 1, 1921, to Feb. 1, 1922.....	4,322,379
Stocks on hand Feb. 1, 1922.....	694,923

DELIVERIES, METROPOLITAN BOSTON (In Net Tons)

Coal year—April 1, 1920, to March 31, 1921.....	2,130,413
Ten months—April 1, 1921, to Feb. 1, 1922.....	1,766,837
Stocks on hand Feb. 1, 1922.....	235,831

"These figures indicate that there is no danger of a shortage for the present coal burning season. If the public act intelligently, the cost of domestic fuel for next winter should be lower than the cost of this season's supply. A prolonged

restriction in the production during the spring and summer will tend to limit the price reduction at the mine, but the greater use of bituminous coal in conjunction with anthracite will stabilize the market for domestic fuel."

National Coal Association Convention Set For May 24 in Chicago

ASIDE from routine business, of which there was an accumulation, the Board of Directors of the National Coal Association at its quarterly meeting in Washington on March 2 found much to discuss in the latest developments with respect to the legal status of trade associations and their possible future activities.

President Bradley was directed to appoint a committee to call on the departments of Commerce and Justice for a more definite statement of the exact position of coal associations than is disclosed by the recent correspondence between Secretary Hoover and Attorney-General Daugherty. While Attorney-General Daugherty has made it plain that statistical matter may be compiled for dissemination to the public through the Department of Commerce, it has not been made entirely clear to the coal operators whether that same information can be first made public by associations themselves.

What the coal associations want is for the Attorney-General and the Secretary of Commerce to tell them precisely in what activities they can indulge and what are illegal, so that they can again proceed.

Of quite as much interest was the determination of May 24 as the date for the 1922 convention and the place as Chicago. The committee on arrangements consists of Harry N. Taylor, chairman; Dr. F. C. Honnold and Walter Cunningham.

The National Coal Association will be represented at the United States Chamber of Commerce convention in Washington on May 16, 17 and 18 by ten delegates and the foreign trade committee was appointed to represent the association at the convention of the Nation Foreign Trade Council at Philadelphia on May 10, 11, 12, 1922.

The railroad relations committee reported its main activities have recently been in connection with the Interstate Commerce rate inquiry. T. H. Watkins, chairman of the foreign trade, committee, said that his committee had been unsuccessful in obtaining a reduction in freight rates at tidewater but are still at work on the matter.

George W. Reed, of Chicago, and Peter Kooi, of Wyoming, have resigned as directors of the National Coal Association. The Illinois associations were asked to name Mr. Reed's successor as a director. W. S. Megeath was elected to succeed Mr. Kooi. E. L. Douglas succeeds Mr. Reed as a member of the government coal contracts committee and Mr. J. C. Brydon becomes chairman.

Debtor Members of Old Tidewater Exchange Face Legal Action by Trustee

LITIGATION growing out of the insolvency of the old Tidewater Coal Exchange, New York City, developed an important legal decision handed down by the U. S. Circuit Court of Appeals in New York City, Feb. 20, by which debtor members of the old unincorporated exchange who have not settled with that organization for their tonnage overdrafts existing on April 30, 1920, when the activities of the exchange ceased, will be called to immediate account in suits instituted by William R. Coyle, trustee in bankruptcy of the exchange.

More than eighty concerns are in debt to the exchange for amounts aggregating more than \$1,000,000, according to James F. Curtis and Emory R. Buckner, attorneys for the creditors' committee, petitioning creditors and the trustee in bankruptcy. As the assets are to be distributed among 100 or more creditors, interest in the results is widespread.

Actions against a number of the debtor shippers has already begun. These, as well as others soon to be started, will be pushed vigorously to an early trial.

IN SPITE of all these expert predictions that business will get better, it will.—*Newspaper Enterprise Association.*

Illinois Operators Propose State Wage Conference; Lewis Says "No," but Farrington May Defy Union

By E. W. DAVIDSON

DEVELOPMENTS in the Middle West during the past few days have advanced the momentous game of "coal chess" now being played by the operators of the land on one side and, on the other, the United Mine Workers of America in its various factions. But even now there is nobody wise enough to say just which way the game is headed.

On Wednesday, March 1, the operators of Illinois proposed to Frank Farrington, president of the Illinois miners, that he and his "associates in Illinois" meet them to "discuss the whole problem of producing coal" in that state. The operators notified John L. Lewis, president of the International union, that they had made the proposal. On Saturday it became known that Farrington had put the case before Lewis and that the International president had replied that "under the policy adopted by the convention it is not possible for District 12 to enter into separate negotiations for a new wage agreement" and that "in my judgment District 12 should refrain from any attempt" to make such a separate deal.

The final and most significant event of the week, however, was Farrington's announcement, Saturday, that "We shall give further consideration to the Illinois operators' invitation to meet them in district wage scale conference at a meeting of our district executive board to be held in St. Louis next Wednesday" [March 8]. This indicates an intention on Farrington's part to fly in the face of the International union, though he has not openly hopped off for such a flight yet.

The great question before the coal men of the land is: How far will Farrington go? Will his bitter feeling toward President Lewis lead him to a final and complete break with the International union in order to win a wage agreement for his men in Illinois? And if he does try to desert the rest of the national organization in its present battle, will he be able to hold his own ranks solid? His meeting in St. Louis may shed further light on these dark questions.

FARRINGTON PROFESES SURPRISE AT OPERATORS' OFFER

Mr. Farrington was in Chicago on Wednesday, March 1, when the operators' proposal was handed him. He was attending a routine business session of the joint conference at the time, and was in the city only for that purpose, he said. The sealed letter was laid before him during the afternoon, when a series of small matters were getting attention, and a studied effort was made to give the impression that he had no previous knowledge of the proposal.

After the meeting, when he read the operators' letter, signed by the presidents of the three Illinois associations, he repeated his well-worn declaration that he had never made any overtures to the operators for a separate agreement. He said that their action of that day was a surprise to him. "I don't see anything for Lewis to do now," said he, "except to let us go ahead with this thing, or else call his general strike. There doesn't seem to be any middle ground—no, not even the policy committee of the union can find any."

Illinois coal men were getting more confident every day that the policy committee could find a way to approve of separate district deals between miners and operators, but President Lewis' flat declaration to Farrington appeared to deflate some of this confidence.

Members of the Illinois Coal Operators Association point out that the proposal to Farrington may prevent government intervention, at least. Some of them frankly say the move will have been worth while if it results in nothing but that.

Even if Farrington should meet the operators, a lot of "discussing" could be enjoyed by all present, without any

wage agreement resulting. The operators are as firm as ever in declaring that miners' wages must take a long drop. They might agree to let the check-off live, provided they could control the expenditure of money checked off, at least to the extent of preventing its use to combat other operators, but they give no indication of having up their sleeve any wage scale which would please Illinois miners.

The operators of Indiana have made no move to follow in the footsteps of Illinois producers and have no immediate intention of it, according to Phil Penna, of Terra Haute, secretary of the Indiana Bituminous Coal Operators Association.

The four communications of last week in the Illinois case follow, first of which is the letter of the three Illinois operators' associations to President Lewis on March 1:

Replying to your telegram of Feb. 27, 1922, in view of the fact that each of your efforts to secure a meeting to consider agreement on joint wage conference have been abortive, we are, as per the attached copy of today's letter to Mr. Frank Farrington, requesting an immediate conference between the operators and miners of the State of Illinois.

You will note therefrom the basis and reasons for our action herein.

The letter is signed by Rice Miller, W. K. Kavanaugh and H. C. Adams, the three association presidents.

The proposal to Frank Farrington, also dated March 1 and bearing the same signatures, was as follows:

The Illinois coal operators have on two occasions, and in accord and compliance with the resolution adopted with the joint interstate agreement, March 31, 1920, accepted invitations extended by John L. Lewis, president of the United Mine Workers of America, to meet for the purpose of discussing the propriety of holding an interstate joint conference.

In each instance, after appointing a time and place, and being urged by us to have such committee meeting, Mr. Lewis has advised us that the meeting would not be held. Under date of Feb. 27 we are in receipt of the following telegram from him:

"Reference invitation extended by mine workers for joint meeting Cleveland, March 2, operators of all districts except Illinois have indicated that they will not be present at such meeting. You are therefore advised that in view of these circumstances meeting will not convene at that date."

In justice to the public, to the miner and to the operator we can see no reason why, because of the failure to confer in other states, a definite attempt to reach an agreement in the State of Illinois should not be made. We have carefully studied and discussed among ourselves terms, conditions and rates on which we are willing to make a contract, and we think an opportunity should be given to the operators in the State of Illinois to discuss with you and your associates in Illinois the whole problem of producing coal in the State of Illinois.

In this connection we call to your attention the 32d Section of our Illinois contract, which reads as follows:

"The joint executive boards are authorized and instructed to arrange for negotiations for the formation of a new contract to begin at a date not later than the expiration of this contract."

We also call your attention to the fact that the Illinois contract, including this paragraph, comes under that guarantee both of yourself and the International union which was given to the President's Bituminous Coal Commission. Please note text:

"Tenth: That the fulfillment of this agreement is guaranteed by the International union, and the fulfillment of joint agreements entered into in any district shall also be guaranteed by the officers of the international organization, as well as by the officers of the district, and it shall be their duty to see that all such agreements are carried out both in the letter and in the spirit."

We realize, as the coal miners in this state must realize, that a large reduction in the cost of producing coal must be made before any general improvement in business conditions can be brought about.

We believe also that by an earnest effort on the part of the operator and miner the serious problems involved in the production of coal in the State of Illinois can be settled and settled fairly to the public as well as to those interested directly in the industry.

For these reasons we feel that it is incumbent upon us both to meet these conditions and carry out these agreements, and therefore suggest that we are prepared to meet with you for this purpose. It is our judgment that this meeting should be held at the earliest consistent date. If entirely agreeable to you we would like to suggest Chicago, Ill., Wednesday, March 8, as a place and time.

Mr. Farrington laid the matter before President Lewis in this telegram:

Under date of March 1 the presidents of the three operators' associations in Illinois directed a letter to me requesting that we meet them in district wage-scale conference for the purpose of

negotiating a wage agreement to replace the one now in effect and as required by the 32d section of our agreement, which requires that negotiations for a new agreement must begin previous to the termination of our existing agreement. Considering that the operators sent you a copy of their letter to me, you are no doubt familiar with its contents, therefore there is no reason for my quoting it therein.

Our district executive board was convened for the purpose of giving consideration to said letter, and that body has directed me to communicate with you for the purpose of securing advice as to how we shall proceed. If we are permitted to go into negotiations with the Illinois operators for the purpose of negotiating a district agreement, our district convention must be convened to formulate a district wage scale policy before the negotiations can begin.

President Lewis' reply to Farrington was:

Your wire. Under policy adopted by reconvened international convention held in Indianapolis Feb. 14 to 18 inclusive it is not possible for representatives of District 12 to enter into separate negotiations with Illinois operators for the purpose of effecting a new wage agreement.

This policy contemplates the negotiation of a wage agreement with the Central Competitive Field as a base, and in the event that no such agreement is negotiated by April 1 declares in favor of a general suspension of mining operation, this action being subject to a referendum vote of the United Mine Workers of America, which is now being taken. This arrangement in its operation is manifestly in opposition to the policy of the district settlements and in my judgment District 12 should refrain from any attempt to consummate a district settlement under these circumstances.

The problems now confronting the mining industry are national in scope and cannot be solved by the operators and miners of any particular district. The fact that the operators of the Central Competitive Field who are obligated to meet us under the provisions of the basic interstate agreement have as yet failed to do so does not alter the situation. The thirty-second clause of your district agreement, to which you allude, is subordinate to the sixteenth clause of the international agreement, which provides for a joint meeting of miners and operators of the Central Competitive Field and which has been ignored and flouted by the operators. The offer of the Illinois operators is obviously intended to destroy the effectiveness and strength of the national policy which has been enunciated and contemplates the breaking up of our forces into many separate units. Their policy is inherently selfish, economically unsound and contains no elements of consideration for public welfare. I therefore advise that the representatives of District 12 decline the offer of the Illinois coal operators.

What's Going to Happen Between Miners and Operators?

Chicago Coal Men Hazard Guess That After a Strike Wage Agreements Will Be Made by Districts Except in Pennsylvania and West Virginia

WHAT'S going to happen between miners and operators? In Chicago, coal men with trained ears always to the ground are hearing all sorts of rumblings. There is no doubt about the confusion in what they hear. The confusion is so great, in fact, that the wisest men among them are making no prophecies—publicly. But they have charted out the probable course of events in their own minds. A composite of the private opinions of a president, a vice-president, and two sales managers of four big coal companies operating in the Western fields can be set forth thus:

A strike still seems inevitable. That has been a foregone conclusion ever since the United Mine Workers took their stand at the Indianapolis convention and upset the conservative program which the International officers hoped to have adopted. The union's policy committee, with its almost unlimited power, continues to put an element of great uncertainty in the miners' position, but these four expert observers are convinced that the policy committee can do nothing to prevent a stoppage of work, at least in most fields. What that committee can and will do immediately after the strike goes into effect is what the four are wondering about.

The move of the Illinois Coal Operators' Association in proposing on March 1 to Frank Farrington, president of the Illinois district of the union, that he meet the operators to talk over a separate wage contract for Illinois, is, of course, an important factor.

In case Farrington obeys the orders of the International and declines to sign a wage agreement for his men with the Illinois operators, then the strike can be general and Farrington will have done nothing up to that moment to split the union. That question of whether Farrington, in his hatred of President Lewis, actually would cause a schism in union ranks if he could, causes a wide division of opinion among the four observers quoted here.

"He wouldn't do it," says one. "Frank does a lot of loud talking, but he wouldn't wreck the union."

"You bet he would," contributes one of the sales managers. "He no longer has any ambitions to be president of the United Mine Workers. If he gets a chance to make a good deal for his Illinois men—just watch him make it; yes, and without a strike, possibly, though I doubt this."

"Well," replied another of the four, answering the same question, "it would be worth a good deal to Illinois operators, maybe, if Farrington would do something with his men between now and April 1 that would keep the mines out here working. I'm not saying he would. But then —"

From that point the four opinions draw together again.

If there is a general strike the probability is that shortly thereafter Illinois will make a separate agreement with a flexible wage scale to enable union mines to meet open-shop competition, with Indiana and southern Ohio, or possibly the whole of Ohio, following suit with separate deals. In this the union's policy committee would have a hand, perceiving the futility of trying to keep up a losing country-wide battle when union finances are so low, and finding ways of convincing the district organizations that a compromise is necessary.

The four private prognosticators, however, are not guessing that district agreements will be signed with the union organization in either Pennsylvania—other than in the strongly organized anthracite district—or in West Virginia. There they believe the battle against the union, so determinedly started with the backing of the United States Steel Corporation, will be fought to a finish, and that the union cannot win. But with the union organization pulverized, the Eastern operators will soon find that the manifold difficulties of running mines with totally unorganized labor will compel a return to some sort of labor organization.

Whatever may be the final result of the Illinois operators' move toward a state agreement with Farrington, it may at least stave off government intervention for the time being, thus thwarting a fond union hope.

On one final point of prophecy the four observers diverge again. One man believes the separate state wage agreements will result in a spasm of price cutting that will reduce the whole coal industry to a serious state, and the others feel that the country's coal demands will be large enough within the year to lessen the bitterness of competition and thus help keep prices on a more even keel.

Anthracite Mine Workers Said to Oppose Referendum Vote on Strike

THE executive committees of the three districts of the United mine Workers covering the anthracite region will meet in New York on March 13, 1922, for a two days' session, prior to meeting the operators on the 15th. It is reported that the miners will then announce officially their objection to the referendum vote on a strike, ballots on which are now in the field, having been mailed out from International headquarters in Indianapolis, Ind.

Nova Scotia Pact Made but Not Ratified

AT a conference held in Montreal on March 1 between representatives of the United Mine Workers and the British Empire Steel Corporation an agreement was reached for a new wage contract involving 12,000 Nova Scotia coal miners. An official statement said that the terms of the agreement would not be published until it had been ratified by the members of the unions affected, to whom their delegates will report. The hope was expressed that the agreement would establish peace for a year.

Will Strike in Western Canada on April 1

NINE thousand coal-mine workers in the Western Canadian fields will strike, according to Robert Livett, chairman of the scale committee of the United Mine Workers of America, if the wage reductions now announced are put into effect.

Secretaries Davis and Hoover Disclaim Formal Effort to Bring About Wage Conference

NOT having authority to make a mandatory call for a conference between the operators and the men of the Central Competitive Field, Secretary of Labor Davis is proceeding informally in the hope that the good auspices of his department may be exercised in bringing about a joint wage conference of the four states. Up to March 6 no formal communication from the Department of Labor had gone out requesting this conference, but it is intimated that informal assurances have been had such as to sustain hope for success in the minds of the officials who seek the interstate negotiations. These officials recognize, however, the difficulty involved in the situation, because of the expressed intention of certain operators not to enter again into an interstate agreement.

One explanation offered as to why the government seeks a conference looking to such agreement is expressed by a prominent official as follows: "Without regard to what they may think of the violations charged against labor, the operators should make every effort to avoid the appearance of violating the terms of the wage contract now in force, which provides for an interstate conference before the end of the contract period. For this reason it is to be hoped that the operators will find it possible to meet the men in conference, even though the result be only to announce their determined intention not to renew an agreement affecting the several states."

During the week Representative Coughlin, of Pennsyl-

vania conferred with Secretary of Labor Davis in connection with the coal situation, but both the Congressman and the Labor Secretary declined to disclose what transpired at the conference. Officials of the Department of Labor are cautious in answering queries covering developments in the situation. While the department has gathered a mass of data bearing on wages and conditions of employment about coal mines, whatever opinions officials in touch with the situation may have reached have not been disclosed nor has access been given to any of the data or conclusions which officials may have reached in a preliminary way.

Secretary of Commerce Hoover, who some time since was delegated by the President to use his good offices to effect a settlement of coal-mining labor problems, has refrained recently from discussion of the situation because every informal statement he has made has been given an official status and has led to many erroneous conclusions in various quarters. Mr. Hoover apparently has taken the position that the wiser policy for him is to remain silent and proceed with quiet informal negotiations looking to settlement of the wage question. Mr. Hoover told the House Appropriations Committee a few days ago when the committee was considering appropriations for the Department of Commerce that among other additional duties which had been imposed upon him was the possibility of settlement of coal-mining labor problems.

Lady Rhondda, First Woman in House of Lords, Known as Coal Queen

VISCOUNTESS RHONDDA, granted the privilege of taking a seat in the British House of Lords, March 2, is, like her late father, better known in British industrial circles than in fashionable society. Her father, who, as

The immense coal fields which she inherited from her father have given her the title of "the coal queen."

She is 39 years old and is the chairman of the board of directors of the Cambrian coal combine, which controls the greater part of the output of the southern Welsh fields, and is chairman of the British Fire Assurance Co.



LADY RHONDDA

David H. Thomas of Wales, built up vast coal interests, owning ships, steel plants and other factories, died in 1918.

Lady Rhondda is director in twenty-seven companies and takes an active part in the management of several of them.

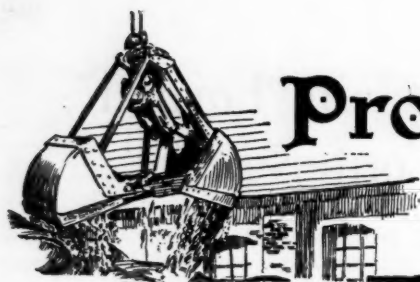
Grange Urges Million Farmers to Rouse Public Sentiment Against Coal Strike

A MILLION farmers, members of the National Grange, are about to come out in opposition to a coal strike. In a special communication to its various local branches the national office is urging the farmers to create public sentiment against a strike. They take the position that the operators and miners should settle their economic differences without imposing a burden on the public through recourse to a strike. In a public statement the grange organization quotes many U. S. Senators in expressions against a coal strike.

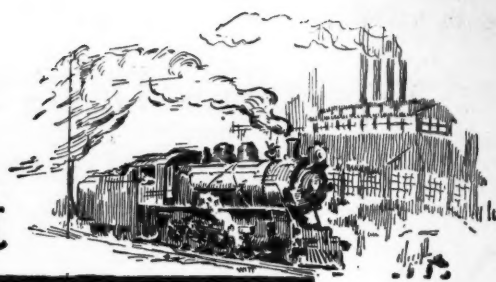
In a letter to members of the Grange, dated Feb. 27, S. J. Lowell says: "The time has now arrived when it seems pertinent that the Grange should express itself in no uncertain terms in protest of a possible strike of mine workers and railroad employees. If a coal strike takes place, as seems possible, in April, the production of the fuel, upon which the prosperity and well-being of millions depend, will cease.

"If coal production stops people will suffer, and the spectacle of a comparatively small group of men and interests seizing the weapon of human misery and human suffering in order to impose their will, and their refusal to deal fairly with one another, and make others pay the penalty, is preposterous in this nation and time.

"The decision of every member of the Grange to do his part in building up an overwhelming public opinion for a fair and just settlement and the enforcement of such settlement to the utmost, will prevent any strike. Owners, workers and the government must feel the power of this public opinion. No man or set of men in this country can succeed against a united public sentiment.



Production and the Market



Weekly Review

PRODUCTION of bituminous coal has definitely outstripped the demand, for the time being at least. The general tone of the market is one of indifference. Here and there buyers have taken heart at the indication of government intercession by way of a plan to bring operators and miners together for a conference on the wage question. Much coal has been flowing to storage recently and the consumer is not excited over the impending struggle, as he feels that strike needs over present reserves can be filled by non-union coals in the event of prolonged interruption to union production.

Large consumers—railroads and public utility plants—are still taking reserve tonnage, but in a more leisurely manner and are now inclined to shop around before buying. The entire coal fraternity is in a state of uncertainty. Strike views are so widely different that many producers and sellers refuse to predict, and the market reflects this uncertain situation. The more conservative miners are said to recognize that the trend of the times makes a wage reduction inevitable and would favor settlement after some preliminary skirmishes have taken place.

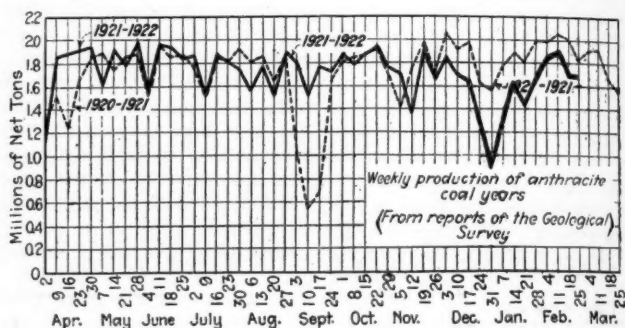
HEAVY TONNAGE OFFERINGS WEAKEN SPOT PRICES

Too heavy offerings of tonnage have weakened prices. As was the case last fall, there has been too much use of the strike threat as a sales argument and it has been so effective that reserves are in some cases adequate for a long term. A mining suspension now appears really necessary before any appreciable market recovery can be expected. Coal Age Index of spot prices was 179 on March 6, compared with 180 on Feb. 27 and 192, Jan. 2.

Indications are not lacking that there will be an increased consumption of coal after April 1. Iron and steel operations are more than double those of last December. Automobile and parts industries are more active. The upward price trend of farm products also encourages the belief that the coal market should be in

a more healthy state after the wage controversy is settled. Considerable optimism prevails as to business, in the not-distant future, when downward adjustments in mine and transportation costs of coal become a reality.

Domestic producers have experienced a rush of orders in the Midwest regions, where a blizzard brought out the need for current supplies. This demand is only temporary, however, as neither householder nor retailer



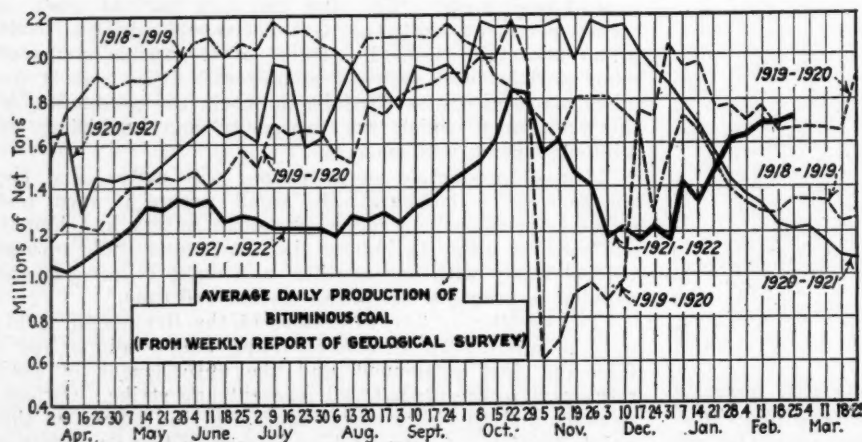
figures on taking more than actual needs for the balance of the coal year.

Anthracite domestic business is largely confined to tonnage needed to eke out the winter. The industry is confronted with the imperative need for lower prices if bituminous competition is not to become insuperable. The shortage of steam sizes has been lessened with the recent heavier offerings.

BITUMINOUS

Production resumed its upward swing during the week ended Feb. 25, when 10,348,000 net tons were mined, according to the Geological Survey. The output for the preceding week was 10,276,000 tons. Reports of loadings for the early part of last week indicate that the present production rate is being maintained.

Since the first of the year the tonnage mined has exceeded consumption and stocks have increased perceptibly. It is estimated that about 11,000,000 tons of additional



Estimates of Production

(Net Tons)			
BITUMINOUS			
Week Ended	1921-1922	1920-1921	
Feb. 11 (a).....	10,309,000	7,859,000	
Feb. 18 (b).....	10,276,000	7,489,000	
Feb. 25 (a).....	10,348,000	7,432,000	
Daily average.....	1,725,000	1,239,000	
Coal year.....	381,375,000	489,361,000	
Daily av. coal yr....	1,374,000	1,756,000	
ANTHRACITE			
Feb. 18.....	1,703,000	2,010,000	
Feb. 25 (a).....	1,701,000	1,816,000	
Coal year.....	77,674,000	81,774,000	
COKE			
Feb. 18.....	135,000	219,000	
Feb. 25 (a).....	144,000	193,000	
Calendar year.....	984,000	1,917,000	

(a) Subject to revision. (b) Revised from last report.

coal would have to be stored to raise reserves to the level reached at the end of the war.

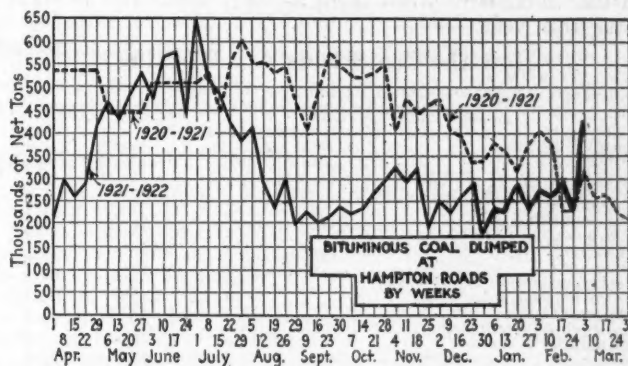
All-rail shipments to New England increased considerably during the week ended Feb. 25, when a total of 4,151 cars passed the five gateways, as compared with 3,368 in the preceding week. Shippers have been pushing their sales in that territory, but heavy price cuts are necessary to meet the competitive tonnage from Hampton Roads.

Dumpings at the Roads for all accounts were 371,753 net tons during the week ended March 2, a sharp increase as compared with the preceding week. The bulk of the tonnage went to New England, although bunker trading is more active. Off-shore exports have gained considerably in the past few weeks and shippers are centering their interest in South American business. Increasing prices of British coals lead to the hope that American exporters can soon get into a better position, especially as the prospects are good for lower delivered prices. February dumpings at Hampton Roads exceeded the January figure by more than 100,000 tons.

The Federal Reserve Board in its report on business conditions for February says that anticipation of a coal strike brought an improved demand, particularly from the railroads. The roads have been able to move all the coal they want and to handle the increased industrial fuel shipments with very little delay. Because of this move-

ment, however, the number of idle coal cars has steadily declined.

Quotations are only firm at best and there are increasing lots of demurrage coal to be picked up. Non-union coals are still active but their price rise has been checked by the



lack of demand. The recent market activity, however, was not up to that of last October, when the rail strike threatened.

Non-union coal evidently is being considered by consumers as available in sufficient quantities to fill such a

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

		Market	Feb. 6	Feb. 20	Feb. 27	March 6			Market	Feb. 6	Feb. 29	Feb. 27	March 6
		Quoted	1922	1922	1922	1922†			Quoted	1922	1922	1922	1922†
Low-Volatile, Eastern													
Poahontas lump.....	Columbus....	\$3.25	\$3.25	\$3.25	\$3.15@3.25		Hooking screenings.....	Columbus....	1.35	1.30	1.50	\$1.40@1.50	
Poahontas mine run.....	Columbus....	2.15	2.10	2.15	1.75@2.00		Pitts. No. 8 lump.....	Cleveland....	3.00	3.10	3.10	3.00@3.25	
Poahontas screenings.....	Columbus....	1.30	1.55	1.40	1.25@1.50		Pitts. No. 8 mine run.....	Cleveland....	2.00	1.95	2.00	1.95@2.00	
Poahontas lump.....	Chicago....	3.00	3.15	3.15	2.75@3.50		Pitts. No. 8 screenings.....	Cleveland....	1.70	1.65	1.80	1.75@1.85	
Poahontas mine run.....	Chicago....	2.00	2.15	2.15	1.75@2.25		Midwest						
Poahontas lump.....	Cincinnati....	3.15	3.15	3.15	3.00@3.25		Franklin, Ill. lump.....	Chicago....	3.65	3.30	3.25	2.85@3.65	
Poahontas mine run.....	Cincinnati....	1.85	1.75	1.75	1.75		Franklin, Ill. mine run.....	Chicago....	2.35	2.50	2.50	2.25@2.75	
Poahontas screenings.....	Cincinnati....	1.20	1.15	1.15	1.00@1.25		Franklin, Ill. screenings.....	Chicago....	2.00	2.00	2.00	1.75@2.25	
*Smokeless mine run.....	Boston....	4.70	4.55	4.60	4.60@4.75		Central, Ill. lump.....	Chicago....	3.00	3.00	3.00	2.75@3.25	
Clearfield mine run.....	Boston....	1.95	1.95	1.95	1.65@2.25		Central, Ill. mine run.....	Chicago....	2.35	2.35	2.35	2.25@2.50	
Cambria mine run.....	Boston....	2.45	2.45	2.45	2.25@2.60		Central, Ill. screenings.....	Chicago....	1.65	1.80	1.80	1.65@1.85	
Somerset mine run.....	Boston....	1.90	1.90	1.90	1.75@2.00		Ind. 4th Vein lump.....	Chicago....	3.25	3.25	3.25	3.00@3.50	
Pool 1 (Navy Standard)....	New York....	2.85	3.00	3.00	2.75@3.25		Ind. 4th Vein mine run.....	Chicago....	2.50	2.50	2.50	2.35@2.65	
Pool 1 (Navy Standard)....	Philadelphia....	3.05	3.05	3.05	2.85@3.25		Ind. 4th Vein screenings.....	Chicago....	1.85	2.00	2.00	2.00@2.25	
Pool 1 (Navy Standard)....	Baltimore....	2.55	2.55	2.70	2.70		Ind. 5th Vein lump.....	Chicago....	2.95	3.20	2.90	2.65@3.00	
Pool 9 (Super. Low Vol.)....	New York....	2.35	2.50	2.40	2.20@2.75		Ind. 5th Vein mine run.....	Chicago....	2.25	2.25	2.25	2.15@2.50	
Pool 9 (Super. Low Vol.)....	Philadelphia....	2.40	2.45	2.45	2.20@2.65		Ind. 5th Vein screenings.....	Chicago....	1.55	1.75	1.75	1.60@1.85	
Pool 9 (Super. Low Vol.)....	Baltimore....	2.20	2.25	2.40	2.25@2.65		Standard lump.....	St. Louis....	2.90	2.75	2.60	2.50@2.75	
Pool 10 (H. Gr. Low Vol.)....	New York....	2.05	2.10	2.00	1.90@2.25		Standard mine run.....	St. Louis....	1.90	1.95	1.95	1.85@2.00	
Pool 10 (H. Gr. Low Vol.)....	Philadelphia....	2.10	2.10	2.10	1.95@2.20		Standard screenings.....	St. Louis....	1.00	1.20	1.10	1.00@1.25	
Pool 10 (H. Gr. Low Vol.)....	Baltimore....	2.00	2.05	2.10	2.10@2.15		West. Ky. lump.....	Louisville....	2.60	2.50	2.65	2.35@2.60	
Pool 11 (Low Vol.).....	New York....	1.75	1.75	1.75	1.65@1.90		West. Ky. mine run.....	Louisville....	1.90	1.85	1.85	1.70@2.00	
Pool 11 (Low Vol.).....	Philadelphia....	1.75	1.75	1.75	1.65@1.85		West Ky. screenings.....	Louisville....	1.15	1.40	1.80	1.65@2.00	
Pool 11 (Low Vol.).....	Baltimore....	1.85	1.75	1.85	1.85@2.00		South and Southwest						
High-Volatile, Eastern													
Pool 54-64 (Gas and St.)....	New York....	1.50	1.50	1.50	1.50@1.65		Big Seam lump.....	Birmingham..	2.90	2.90	2.60	2.50@2.75	
Pool 54-64 (Gas and St.)....	Philadelphia....	1.50	1.50	1.50	1.40@1.60		Big Seam mine run.....	Birmingham..	1.85	1.85	1.85	1.70@2.00	
Pool 54-64 (Gas and St.)....	Baltimore....	1.45	1.40	1.40	1.50@1.60		Big Seam (washed).....	Birmingham..	2.10	2.10	1.85	1.75@2.00	
Pittsburgh sc'd. gas.....	Pittsburgh....	2.65	2.65	2.65	2.60@2.75		S. E. Ky. lump.....	Louisville....	2.90	2.60	2.55	2.40@2.60	
Pittsburgh mine run (St.)....	Pittsburgh....	2.15	2.15	2.15	2.10@2.20		S. E. Ky. mine run.....	Louisville....	1.45	1.55	1.55	1.50@1.65	
Pittsburgh slack (Gas)....	Pittsburgh....	1.65	1.65	1.65	1.60@1.70		S. E. Ky. screenings.....	Louisville....	1.15	1.20	1.35	1.25@1.35	
Kanawha lump.....	Columbus....	2.65	2.65	2.55	2.25@2.75		S. E. Ky. lump.....	Cincinnati....	2.90	2.50	2.35	2.00@2.50	
Kanawha mine run.....	Columbus....	1.65	1.65	1.60	1.50@1.75		S. E. Ky. mine run.....	Cincinnati....	1.45	1.50	1.75	1.85@1.60	
Kanawha screenings.....	Columbus....	1.30	1.30	1.40	1.25@1.40		S. E. Ky. screenings.....	Cincinnati....	0.85	1.10	1.15	1.15@1.25	
W. Va. Splint lump.....	Cincinnati....	2.65	2.35	2.25	2.00@2.50		Kansas lump.....	Kansas City..	5.00	5.00	5.00	5.00	
W. Va. Gas lump.....	Cincinnati....	2.25	2.05	1.85	1.75@2.25		Kansas mine run.....	Kansas City..	4.00	4.00	4.00	4.00	
W. Va. mine run.....	Cincinnati....	1.45	1.50	1.40	1.25@1.60		Kansas screenings.....	Kansas City..	2.50	2.50	2.50	2.50	
W. Va. screenings.....	Cincinnati....	1.10	1.20	1.30	1.25@1.35		*Gross tons, f.o.b. vessel, Hampton Roads						
Hooking lump.....	Columbus....	2.65	2.65	2.55	2.50@2.75		†Advances over previous week shown in heavy type, declines in italics.						
Hooking mine run.....	Columbus....	1.75	1.90	1.90	1.75@2.00								

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

		Market	Freight	Feb. 20, 1922		Feb. 27, 1922		March 6, 1922†	
		Quoted	Rates	Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.61			\$7.60@7.75		\$7.60@7.75		\$7.60@7.75
Broken.....	Philadelphia....	2.66		\$7.00@7.50	7.75@7.85	\$7.00@7.50	7.75@7.85	\$7.00@7.50	7.75@7.85
Egg.....	New York....	2.61		7.25@7.75	7.60@7.75	7.25@7.75	7.60@7.75	7.25@7.75	7.60@7.75
Egg.....	Philadelphia....	2.66		7.15@7.75	7.75	7.15@7.75	7.75	7.15@7.75	7.75
Egg.....	Chicago....	5.63		7.50*	7.40*	7.50*	7.40*	7.50*	6.95@7.40*
Stove.....	New York....	2.61		7.75@8.10	7.90@8.10	7.75@8.10	7.90@8.10	7.75@8.10	7.90@8.10
Stove.....	Philadelphia....	2.66		7.75@8.15	8.05@8.25	7.75@8.15	8.05@8.25	7.75@8.15	8.05@8.25
Stove.....	Chicago....	5.63		7.75*	7.60*	7.75*	7.60*	7.75*	7.80@7.60*
Chestnut.....	New York....	2.61		7.85@8.10	7.90@8.10	7.85@8.10	7.90@8.10	7.85@8.10	7.90@8.10
Chestnut.....	Philadelphia....	2.66		7.75@8.15	8.05@8.25	7.75@8.15	8.05@8.25	7.75@8.15	8.05@8.25
Chestnut.....	Chicago....	5.63		7.75*	7.60*	7.75*	7.60*	7.75*	7.80@7.60*
Pea.....	New York....	2.47		5.00@5.50	5.75@6.50	5.00@5.25	5.75@6.45	4.50@5.50	5.75@6.45
Pea.....	Philadelphia....	2.38		4.75@5.00	6.15@6.25	4.75@5.00	6.15@6.25	4.75@5.00	6.15@6.25
Pea.....	Chicago....	5.63		6.10*	6.10*	6.10*	6.10*	6.00*	5.60@6.10*
Buckwheat No. 1.....	New York....	2.47		3.00@3.50	3.50	3.00@3.50	3.50	3.00@3.50	3.50
Buckwheat No. 1.....	Philadelphia....	2.38		2.75@3.50	3.50	2.75@3.50	3.50	2.75@3.50	3.50
Rice.....	New York....	2.47		2.00@2.50	2.50	2.00@2.50	2.50	2.00@2.50	2.50
Rice.....	Philadelphia....	2.38		2.00@2.25	2.50	2.00@2.50	2.50	2.00@2.50	2.50
Barley.....	New York....	2.47		1.50@1.75	1.50	1.50@1.75	1.50	1.40@1.60	1.50
Barley.....	Philadelphia....	2.38		1.25@1.75	1.50	1.50@1.75	1.50	1.50@1.75	1.50
Birdseye.....	New York....	2.47			2.00@2.50	1.60@1.90	2.00@2.50	1.65@1.75	2.00@2.50

*Net tons, f.o.b. mines.

†Advances over previous week shown in heavy type, declines in italics.

gap in supply as may be occasioned by a strike. From all sections the reports are much the same—a growing indifference to sellers' offerings. The inference also gained from this is that in many cases considerable coal stocks have been built up and that consumers hesitate to take on further safeguards when there is lower-priced fuel in sight later this year.

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report

Fields	Six Months July to Dec. 1921	1922 to Date	Week Ended Feb. 18
Illinois.....	44.8	50.6	55.5
Indiana.....	41.4	65.1	58.0
Ohio, southern.....	22.9	23.3	21.7
Ohio, north and central.....	52.6	43.4	47.6
Pittsburgh*.....	30.4	26.6	34.5
Pittsburgh†.....	41.2	36.1	41.0
Westmoreland.....	54.9	54.9	54.3
Central Pennsylvania.....	39.1	46.5	55.2
Somerset County.....	55.5	72.9	78.2
Cumberland-Piedmont.....	46.6	49.7	47.7
Panhandle, W. Va.....	55.3	45.8	52.9
Fairmont.....	35.3	30.9	37.2
Winding Gulf.....	45.7	60.4	63.7
New River.....	24.3	27.8	32.7
Pocahontas.....	49.8	57.5	59.3
Tug River.....	48.1	58.6	74.3
Kanawha.....	26.0	12.9	14.3
Logan.....	47.6	57.0	65.8
Kenova-Thacker.....	38.2	49.6	60.6
Harlan.....	53.3	51.7	59.3
Virginia.....	54.8	53.7	57.8
Alabama.....	63.5	60.3	64.1
N. E. Kentucky.....	32.9	41.8	49.7
Western Kentucky.....	32.5	33.8	35.4
Hazard.....	51.7	60.8	69.1
Iowa.....	57.4	74.8	72.7
Missouri.....	50.7	61.9	60.4
Kansas.....	42.0	48.1	61.7
Oklahoma.....	63.9	58.3	55.9

*Rail and river mines combined.

†Rail Mines.

Bold face—Non-union.

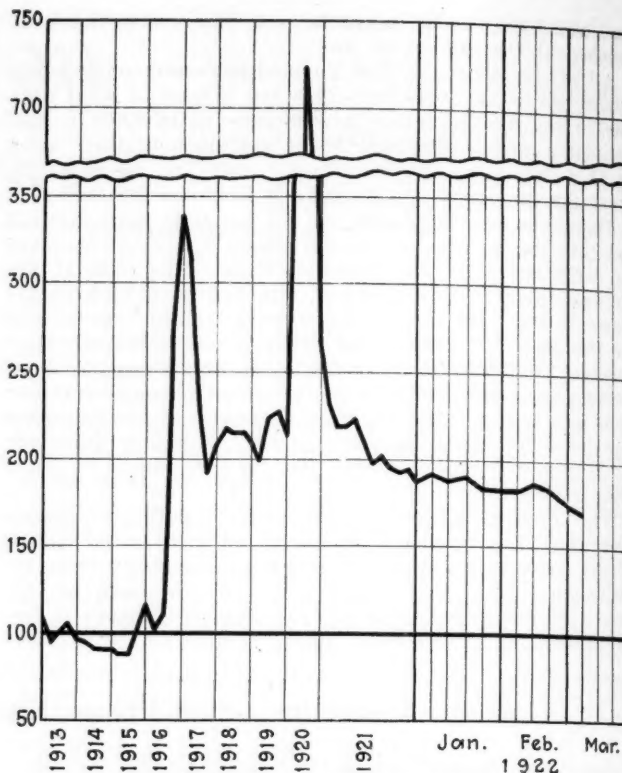
COKE

Beehive coke production increased to 144,000 net tons during the week ended Feb. 25, from 135,000 tons in the preceding week. This was the largest production attained in any week since last March.

In the last three weeks coke prices have advanced nearly 50c. all around. From present indications, however, the impetus has been removed. The increase was attributable mainly to the coming coal strike but as the coal market fails to gain further ground coke producers have no trouble in securing tonnage at softer prices.

ANTHRACITE

Production of hard coal was 1,701,000 net tons during the week ended Feb. 25, 1922, only 2,000 tons less than in the preceding week. A slight temporary improvement was caused by the recent storms, but domestic purchases are being made on a hand-to-mouth basis. Steam sizes are still in good call although the heavy movement has softened independent prices.



Coal Age Index 179, Week of March 6, 1922. Average spot price for same period, \$2.17. This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the total output of the United States, weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board. The result is a series of index numbers, plotted in the above diagram.

Neither the retailer nor the householder considers it necessary to have more than a small supply on hand. It is quite likely that the new coal year will see these stocks reduced to a minimum, so that buyers will be able to take full advantage of the hoped-for lower prices. New England is an exception to this policy. All-rail shipments during the week ended Feb. 25 were 3,362 cars, as compared with 2,812 cars in the previous week. Better buying prevails in that section as retailers are extending their stocks to cover the month of May.

TEN DEPARTMENTS OF THE CITY OF NEW YORK are this week asking for bids on 87,000 tons of anthracite and bituminous coal, wagon and barge delivery. Bids will be opened March 16.

Coal Paragraphs from Foreign Lands

CZECHOSLOVAKIA—Deposits of coal have been discovered in sub-Carpathian Russia, near Lupca, in the province of Marmaros. Exploitation is to be commenced during the spring. The Government has authorized the Zivnostenska Banka to form a company for trade in coal with headquarters at Prague.

GERMANY—Ruhr production during the week ended Feb. 18 was 1,950,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 1,821,000 tons.

Railroad freight rates for the transport of coal up the Rhine have been increased by 120 marks to 1,656 marks per 10 tons.

ITALY—Latest quotations of Cardiff best steam on the Genoa market range around 42s., according to a cable to *Coal Age*. This is an increase of 3s. from last week's market.

AUSTRIA—The Austrian coal reserve has been greatly diminished, owing to the German railway strike and the Czecho-Slovak mine strike. No coal has been received from Czecho-Slovakia recently and the Vienna city gas and electric works are running short.

INDIA—The coal market is firm. Foreign consignments are arriving. Mills are purchasing small quantities. There is a stock of about 30,000 tons of Bengal coal in Bombay.

BELGIUM—Industrials are slack, buyers being reserved owing to the insignificant amount of the decline in home prices and on account of English offers. There have been big transactions in English coal at 92.50 fr., delivered, or 15 fr. below Belgian prices.

BRAZIL—A measure has been approved by the Chamber of Deputies providing for a 10 per cent clearance tax on imported coal. Although coal is on the free list, like all other articles

on this list, it paid a small clearance tax, in this case 2 per cent. The increase to 10 per cent is equivalent to subjecting it to a tariff duty. Another bill approved by the finance committee but not yet through the Chamber of Deputies, authorizes the government to enter into agreements with the coal producing states and the Brazilian railways and steamship lines for preferential treatment of local coal.

CHINA—Among other commodities, the export of coal from the colony of Hong Kong has been prohibited.

POLAND—The restrictions touching the purchase and sale of coal within the Polish State have been abolished as from March 1. As for the free export of coal abroad, that will depend on how the Upper Silesian problem is finally resolved.

SWEDEN—During January, 1922, imports of coal at Stockholm were 13,000 tons.

Foreign Market And Export News

British Production Registers Another Increase; Export Markets Are Stronger; Prices Up

STEADILY increasing production in Great Britain has followed the better export market. Production during the week ended Feb. 18, as cabled to *Coal Age* was 5,001,000 gross tons, as compared with 4,903,000 tons in the preceding week, and 4,803,000 during the week ended Feb. 4.

Forward business includes 170,000 tons for Bombay and Baroda railways, April to December deliveries on Durham bunkers, and April to August orders for best Blyth steam coals. Prices are stronger on practically all grades.

The Crown Agents for the Colonies, acting for the Government of Mauritius, has invited tenders for the supply of 12,000 tons of Welsh steam coal or South African coal.

In view of the complaints that whereas wages have fallen but prices have not to any appreciable extent, the owners have issued a statement to the effect that at the end of December, 1920, when the coal industry was under Government control, the total cost per ton other than wages amounted to 9s. 9½d., of which 6s. 5.33d. represented the costs of timber and stores, and 3s. 4.28d. other costs. Since the industry was decontrolled, the cost per ton for timber and stores has steadily declined, and is now about 3s. per ton. Other costs, excluding timber and stores, consist of a variety of items, such as the salaries of the clerical and administrative staff, depreciation and repairs, local rates, royalties—which generally speaking are on the pre-war basis—and welfare levy which it is not in the power of collieries to control.

As the result of an agreement recently concluded between the owners and the men, costs now bear an apparent increase in respect to wagon charges, but this increase is set off by a figure on the other side of the account in respect of wagon revenue.

In the northeastern fields there is a great loss in output and rise in costs at the beginning of every quarter in the collieries, due to men going into seams which are new to them, and leave

filling the flats to go hewing elsewhere.

The owners have again approached the railway companies to reduce further the rates for transporting coal. The owners pointed out that the output of coal has steadily increased, and that such reductions in price as have been made are largely at the expense of owners' profits and miners' wages.

United States January Exports of Bituminous Coal, by Customs Districts

Customs Districts	Gross Tons
Vermont	519
St. Lawrence	113,509
Rochester	22,317
Buffalo	233,458
New York	3,883
Philadelphia	12,876
Maryland	11,030
Virginia	69,406
South Carolina	14,007
Florida	1,629
Mobile	131
New Orleans	360
Galveston	6
San Antonio	101
El Paso	5,489
San Diego	6
Arizona	904
San Francisco	717
Washington	685
Dakota	2,564
Duluth & Superior	7,820
Michigan	97,576
Ohio	44,920
Total	643,913

Hampton Roads Activity Increases

February showed a decided revival in the coal trade, with total dumpings of 1,089,378 tons, against 937,664 tons for January. Dealers are highly optimistic over the situation.

Coastwise business was responsible largely for the increased dumpings, although both bunker and export business had their share in bringing up the total. South American markets are improving.

The N. & W. Piers dumped 503,551 tons in February, the Virginian, 330,783 tons, and the C. & O. 255,044 tons. At all piers the end of the month found considerable tonnage awaiting cargo, with prospect of continued good business.

Faith in the local situation has been

indicated by the recent advent of new coal concerns and the expansion of facilities of concerns already in business. Interest among coal men seems to be centered on South America, and they are preparing to develop trade in that direction.

Hampton Roads Pier Situation

	Week Ended— Feb. 23	March 2
N. & W. Piers, Lamberts Point:		
Cars on hand	1,889	2,156
Tons on hand	109,520	126,651
Tons dumped	101,143	160,268
Tonnage waiting		12,000
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,859	1,585
Tons on hand	93,450	79,250
Tons dumped	56,206	128,043
Tonnage waiting	37,654	28,200
C. & O. Piers, Newport News:		
Cars on hand	1,655	1,273
Tons on hand	87,730	63,730
Tons dumped	52,108	83,442
Tonnage waiting	9,600	455

Export Clearances, Week Ended March 2, 1922

FROM HAMPTON ROADS:

For Atlantic Islands:	Tons
Nor. S.S. John Blumer, for Castries	2,472
Am. S.S. Levisa, for Jamaica	2,409
Brazil:	
Nor. S.S. Fragner, for Rio de Janeiro	7,015
For Canada:	
Br. S.S. Bethlehem, for St. Johns, N. B.	3,019
Du. S.S. Parkhaven, for St. Johns, N. B.	6,577
For Chile:	
Br. S.S. Vestalia, for Valparaiso	995
For Colombia:	
Nor. S.S. Lom, for Cartagena	995
For Cuba:	
Nor. S.S. Bratland, for Santiago	2,126
Ger. S.S. Franziska, for Havana	2,624

FROM PHILADELPHIA:

For Cuba:	
Br. S.S. Berwindale, for Havana	

Pier and Bunker Prices, Gross Tons

	PIERS		
	Feb. 25	March 4†	
Pool 9, New York.....	\$5.45@ \$5.75	\$5.40@ \$5.60	
Pool 10, New York.....	5.25@ 5.40	5.10@ 5.20	
Pool 9, Philadelphia.....	5.60@ 5.90	5.50@ 5.85	
Pool 10, Philadelphia.....	5.25@ 5.60	5.20@ 5.60	
Pool 71, Philadelphia.....	5.70@ 6.00	5.70@ 6.00	
Pool 1, Hamp. Rds.....	4.65	4.60	
Pools 5-6-7 Hamp. Rds.....	4.25	4.25	
Pool 2, Hamp. Rds.....	4.50	4.45	

BUNKERS

Pool 9, New York	\$5.70@6.05	\$5.70@5.90
Pool 10, New York	5.55@5.75	5.40@5.60
Pool 9, Philadelphia	5.90@6.15	5.90@6.10
Pool 10, Philadelphia	5.70@5.85	5.60@5.85
Pool 1, Hamp. Rds.	4.80	4.75
Pool 2, Hamp. Rds.	4.60	4.55
Welsh, Gibraltar	38s. f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	55s. f.o.b.	55s. f.o.b.
Welsh, Lisbon	40s. f.o.b.	40s. f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	39s. t.i.b.	39s. t.i.b.
Welsh, Messina	36s. 6d. t.i.b.	36s. t.i.b.
Welsh, Algiers	34s. f.o.b.	34s. f.o.b.
Welsh, Pernambuco	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Bahia	62s. 6d. f.o.b.	62s. 6d. f.o.b.
Welsh, Madeira	40s. f.a.s.	40s. f.a.s.
Welsh, Tenerife	40s. f.a.s.	40s. f.a.s.
Welsh, Malta	40s. f.o.b.	40s. f.o.b.
Welsh, Las Palmas	40s. f.a.s.	40s. f.a.s.
Welsh, Naples	39s. f.o.b.	39s. f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	55s. f.o.b.	55s. f.o.b.
Port Said	46s. 6d. f.o.b.	46s. 6d. f.o.b.
Belgian, Antwerp	30s.	30s.
Alexandria	47s.	47s.
Bombay	38 rupees	38 rupees
Capetown	42s.	42s.

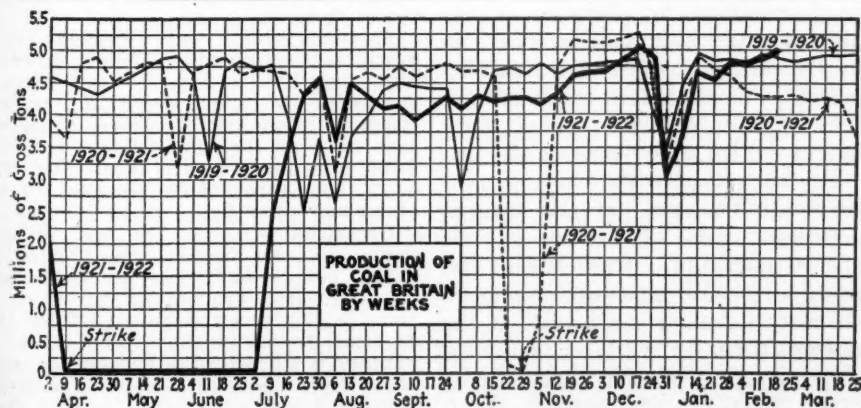
Current Quotations British Coal f.o.b.

Port, Gross Tons

Foreign Quotations by Cable to Coal Age

	Feb. 25	March 4†
Cardiff:		
Admiralty, Large	27s. 9d.	27s. @ 27s. 6d.
Steam, Smalls	19s. 9d.	19s. 6d. @ 20s.
Newcastle:		
Best Steams	25s.	25s.
Best Gas	23s. 6d.	23s. @ 24s.
Best Bunkers	22s. 9d.	23s. 6d. @ 24s.

†Advances over previous week, shown in heavy type; declines in *italics*.



North Atlantic

Better Coals Move Well; Unsold Tonnage Hurts Prices

Industrial Consumers Indifferent to Strike, Having Confidence in Non-Union Capacity—Contract Negotiations in Abeyance Pending Wage Settlement—Inquiries Are Only Feelers.

LINE demand exceeds that at Tidewater, but a distinct attitude of indifference is noted among industrial fuel buyers, despite the certainty of a strike. The feeling prevails that non-union producers can fill any gaps in reserve stocks that may exist when the strike comes. There is an increasing unsold tonnage en route which has a softening tendency on prices.

Contract negotiations are absolutely in abeyance until the strike is settled. Many inquiries are heard but most of these are simply "feelers," as the future is too uncertain for either side to tie up tonnage at this time.

NEW YORK

Demand is not brisk and there is no rush to stock up. It is evident that those who need coal have it, while those who do not need it are not buying.

There is a well-founded feeling that if the union miners quit work the non-union mines will be able to take care of the demand throughout the summer. Consumers are not showing any signs of worry. Some manufacturers are said to have from 30 to 90 days' supply on hand.

There is no trouble to move the better grades whether they be on contract or in the spot market. Some of the railroads are said to be preparing to load for their own use on and after March 14, using their own cars and not unloading them until necessary.

There is no tendency on the part of either buyers or producers to enter into contract relations. What might happen after the new wage scale is signed is conjectural.

BALTIMORE

During February a total of only 12,584 tons was exported from Baltimore, not a single ship clearing from Feb. 10 to the end of the month. The collapse of the European business is shown by the fact that not a single vessel has cleared from Baltimore since Jan. 1 for European delivery.

For some time past British ships have been carrying Welsh coals as ballast and selling the fuel for whatever figure they could get at the port of destination. This practice has reached even to the west coast of the United States. With the certainty of a strike in the coal fields there has been an utter failure on buying stimulation here.

There is a keen competition that is undercutting even the recognized low market. It is a remarkable fact that some recent sales have been noted here from producer to consumer direct at prices which Baltimore middlemen could not get even from their long-established mine connections.

UPPER POTOMAC

A few mines are resuming operation, following the acceptance by miners of an adjustment in wages but such resumption is on a small scale, so that taking the region as a whole the output is extremely limited. A drop in prices has tended to further restrict output.

PHILADELPHIA

Trade is quiet, although there are many rumors afloat of certain big interests being in the market for heavy tonnages. Railroads continue in the plan of moderate buying and it is believed that much of the coal they do take is non-union.

Prices remain fairly firm, and at times there is an upward tendency, but never sustained long enough to justify a change in the average quotations. Increased buying of the high-quality coals has an upward tendency on these quotations, and sales are occasionally reported at a trifle better than the mar-

ket. It looks as if there would have to be an extraordinary demand on all grades before any permanently higher prices are achieved.

The iron industry has been considerably set back recently by some of the largest plants closing down again for an indefinite period, one within the city usually employing 10,000 men, having less than 1,000 on their rolls.

CENTRAL PENNSYLVANIA

The miners' demand for five days and six hours precludes any settlement until the demand is repudiated. The statement that the miners are not asking for a raise in view of the demand for a week of thirty hours at existing rates is a fallacy.

It really amounts to a demand for an increase of about 24 per cent on the total cost of producing coal in the way of wages. The action of the administration at Washington in trying to convene a joint conference is looked upon with much disfavor by the operators, who are of the opinion that if the government tries to force arbitration, there will be but one alternative, which is to insist that the wage rates in the non-union fields shall be made the same as in the union sections.

Production was largely increased during February in anticipation of a strike.

FAIRMONT

Production during the last week of February was on a larger scale than during the corresponding period of January. Railroad fuel shipments during the early part of the week were heavy but declined somewhat during the latter part of that period.

New England

Consumers Defer Buying; Steam Users' Reserves Ample

Marine Rates Soften—No Indication of Runaway Market—Low Delivery Costs of Southern Coals Severely Handicap Central Pennsylvania Product

THE majority of steam users have ample fuel reserves for the present. The recent softening of marine freights and prices f.o.b. Hampton Roads is enough to induce would-be purchasers to postpone action until a little later date, as there is no indication in sight of a runaway market. Small orders show the extent of the intensive selling campaigns which are being conducted.

All-rail shippers are striving hard to obtain business but the lowered delivered costs of Southern coals are discouraging. This element imposes an almost impossible handicap on central Pennsylvania coals at the present time.

In the face of probable labor troubles in the union districts, there is apparently very little interest here among

buyers. The majority of steam-users feel their reserves are ample for the present.

By water especially there has been a falling off in receipts and there is a disposition among factors here to clean up what coal is coming forward before trying to do much advance selling.

Prices on Navy acceptable grades at Norfolk and Newport News are on a basis of \$4.60@\$4.75 per gross ton f.o.b. vessel, with Pool 2 selling for 15c.@25c. less. On cars Boston, quotations are reasonably firm at \$6.35@\$6.50 per gross ton, although there are beginning to be lower prices for deliveries two or three weeks hence, based on modified vessel freights.

Steamers that were commanding \$1.25, Hampton Roads to Boston, a fortnight ago are now to be had for a succession of trips at \$1.10, while charters for one trip at a time are likely soon to be on the same basis. Barges, 2,500 tons upward, are being held at \$1.25, but trade opinion inclines to a somewhat lower figure soon.

Occasionally there are low prices made on coals from central Pennsylvania, but to all points accessible to the smokeless grades the latter continue to dominate the market. Even at \$1 from Philadelphia by water the advantage is still with the Pocahontas and New River agencies, except in a very restricted area not too far east of the Hudson River.

Anthracite

Domestic Demand Follows Weather; Steam Coals Active

Householders and Retailers Keep Stocks at Minimum, Expecting Price Drop—Independent Steam Prices on Level with Company — Output Declines Slightly.

DOMESTIC demand for anthracite is purely a weather proposition. Neither householder nor retailer wants much coal on hand for the new coal year, as the probable price drop in the future is no incentive to stocking over the dull season. The exception to this is in New England, where retailers are now extending their reserves to cover the month of May.

Steam coals are still active and independent quotations parallel the range of company schedules, despite the fact that recent offerings have eased the demand. Production shows only a slight decline in the last week of February.

NEW YORK

Strike warnings seem to have little effect on the majority of coal users. Consumers are showing little interest in the possible scarcity of domestic sizes this summer.

With the exception of pea coal, the producer is not having much trouble in keeping his supply on the move, although the independent miner is not getting more than company schedule for the better grades.

Steam coals show the best movement but are growing in volume because of the reopening of many mines and washeries. Weather conditions have also aided in diminishing the demand. Barley was practically out of the market early in the week but later the supply increased and quotations became easier.

Retail prices in Manhattan and Brooklyn follow:

	Manhattan	Brooklyn
Broken	\$12.85	\$12.90
Egg	12.85	12.90
Stove	13.10	13.15
Chestnut	13.10	13.15
Pea	10.75	10.90
Buckwheat	7.65	7.80
Rice	6.75	6.80
Barley	5.75	5.80

Prices for domestic coals in Manhattan do not include labor while it is included in the Brooklyn prices.

BALTIMORE

The hard coal business at Baltimore is at a standstill. While the weather has been typically March-like, with some little sleet, the temperatures have not been at all low for the season and the demand for coal is almost nil.

Most of the dealers now figure on merely drifting between now and April 1, or until it is seen whether there is to be a strike in the hard coal fields and

how effective it is likely to be if it does come. The comparatively few dealers here who have any considerable stocks on hand in yards and who have figured a loss thereon through a spring cut in price, are now looking forward to being classed as the fortunate ones if the strike comes on and movement is interrupted.

The experience of the past season, in which Baltimore entered the fall period with a shortage of 120,000 tons and yet went through without trouble, although the season was unusually mild, has convinced the dealers that they will be able to get along pretty well even if the strike holds out for two or three months.

BOSTON

Buying has improved notably the past fortnight, due partly to seasonable weather but more largely to the expected suspension. Retail dealers who were saying a month ago they would plan to have enough on hand March 31 to meet ordinary April requirements are now extending that to cover the whole of May.

Certain of the producing companies have already such an accumulation of boats at New York loading piers that they will hardly be able to clear them until the latter part of the month. As yet this is not general, but there is reason to expect enough business for the balance of the month to keep collieries running on full time.

On all-rail much the same conditions prevail. The accent is on chestnut, but egg and stove are now also in active demand, as well as most of the steam sizes.

ANTHRACITE FIELDS

Severe storms during the past week stimulated demand and the market has been further aided by the approach of the strike period. Owing to the lateness of the date set for a conference between producers and miners it seems hardly possible that any agreement can be reached by April 1.

A reduction in price must be effected unless operators are to lose much of their trade. No one, outside of the union, professes to believe that the outcome of the strike could result in higher wages.

PHILADELPHIA

Ordinary March weather has been sufficient to keep up a fair ordering on the part of the consumer. Dealers continue to order more or less freely of the large sizes, particularly stove and nut. Despite all efforts to move pea, it remains positively flat, and the independents with the lowest prices get such business as is offering.

Retailers are much puzzled as to the outlook for April 1. As they believe the operators are in earnest in making a fight for lower prices, they hesitate to carry a heavy stock. A group of retailers discussing the possible reduction in case of a settlement by April 1, agreed that it might be \$1, being made up of 50c. for the usual spring cut, and

50c. because of wage reductions. The public's idea of a reduction is from \$2 to \$3.

The consumer is in a few instances beginning to take in some coal with the strike in mind, but this is far from being noticeable.

Steam coals are still active, although there has been a slight falling off in the demand for buckwheat. This is quickly shown in the demand for this size from the independent shippers, some of whom were quoting \$3@3.25 last week. Rice is in moderate demand, and barley is active.

Coke

CONNELLSVILLE

The spot furnace coke market, which recently advanced sharply, has failed to stiffen further, if indeed it has entirely held its position. There is no difficulty in picking up at least a few carloads at a time at \$3.25, in fairly good grades, while there is no doubt that several operators would blow in ovens at somewhat less than \$3.50 if they were assured of business for any length of time.

Foundry coke, however, has experienced an additional advance. Several particularly well-known brands have been selling in the past week at \$4.75, while the \$4 price on ordinary standard coke has entirely disappeared. Coke that a few weeks ago sold freely at \$3.75 is now \$4.25.

The Connellsville coal market has lost ground, in sales and inquiry, in the past week, and as to prices, it had not experienced much of an advance. While it was said recently that coke was too cheap in relation to coal, the condition now is that except for a few special grades of coal the coke market is the higher of the two. The market is quotable at \$3.25@3.50 for spot furnace and \$4.25@4.75 for spot foundry.

The *Courier* reports production during the week ended Feb. 25 at 63,460 tons by the furnace ovens, and 42,270 tons by the merchant ovens, a total of 105,730 tons, an increase of 3,140 tons.

UNIONTOWN

Again the coal market has fallen into a dull state following several days of activity caused principally by orders in anticipation of the union strike. While conditions generally in the Connellsville region are showing an improvement daily there is not the spurt in buying that producers expected but they are nevertheless prepared for capacity production if market conditions warrant.

The market took a decided spurt last week but it is now almost back to normal again, as "normalcy" has been termed in the coal business for the last year. Demand is spotty, inquiries few, and orders fewer. There is however, considerable tonnage moving from the region. The market is quotable as follows: Sewickley steam, \$1.35@1.50; Pittsburgh steam, \$1.50@1.70 and by-product \$1.70@1.85.

The spotty condition also has affected the coke trade, there being but a limited demand for prompt delivery tonnage with not more than enough available to fill requirements. The market therefore is comparatively steady although sales are few.

Chicago and Midwest

Steam Market Barely Firm; Storm Aids Domestic Call

Demand Lacks Snap—Industries Probably Will Average 45-Day Supply April 1—Market Reflects Uncertainty of Strike Situation—Separate Settlements Likely.

MIDDLE WESTERN steam markets are at best only firm, even in the face of the approaching strike. Large buyers are leisurely taking coal and there is no snap to the demand. The average industrial bin will not show more than forty-five days' supply on hand April 1. The recent blizzard produced a rush of domestic orders, as low supplies have been the prevailing policy throughout this section.

The market reflects the uncertain strike situation. Separate settlements with the men now seem likely, and the more conservative miners' element apparently recognizes the necessity for wage reductions. The men seem to have made up their minds that after some preliminary operating disturbances a cut is inevitable.

Very inclement weather has led to some demand for coal, but while well defined in some localities, it is nowhere near what was anticipated. Recent blizzards have brought about a certain demand, but car numbers were demanded in practically nine cases out of ten. The dealers are only buying for their immediate needs and do not wish to place orders unless they can receive a car number by return mail, or better.

The market on steam coals is not showing any improvement over last week or the week before that, and in the face of a threatened strike this situation is very hard indeed to realize. Some steam coals are being purchased, but as has been the case all spring, no great rush has been noticed as yet.

The market on domestic coals is very erratic. In some instances operators and distributors having car numbers available, are obtaining a premium for them. Franklin County operators are booked up between now and April 1 on their 6-in. lump and 6 x 3-in. furnace. Small egg is, for the time being, difficult to move and some operators are making concessions to wholesalers. Out in Iowa and in portions of Illinois the demand for high-grade Eastern coals continues strong with prices on block in the vicinity of \$2.75 and egg around \$2.25. Other prices are quoted in the Weekly Review.

Ideas on the strike subject are very different. No matter how well informed one happens to be, one can always hear reasonable arguments, defending each of the positions set forth above. Some Illinois and Indiana operators, however,

have advised their trade to stock up at least thirty to sixty days, but we know of no operator who has cautioned his trade to stock up more than sixty days.

CHICAGO

The entire Chicago coal fraternity is in a state of uncertainty over the coming strike. Sales agents have refused to express themselves in regard to developments after April 1. In the meantime, the market reflects very strongly this uncertain feeling. The demand for domestic is excellent on some days, while on others there is absolutely no demand at all. This is true more or less of the steam situation.

Southern Illinois prepared coals in the larger sizes are holding firm at \$3.65. Indiana domestic of the best grade is to be had ranging \$3@3.50, with the demand only fair. A great deal of West Virginia and Kentucky coal is finding a market through, rather than in Chicago, and prices are holding fairly firm on block in the vicinity of \$2.50@2.75. Smokeless coals are to be had in large quantities, with mine run very close to \$1.65@1.75. Every now and then some smokeless coal goes on demurrage and can be picked up at less. Anthracite showed some slight improvement last week, no doubt being brought about by the desire on the part of a small number of retailers to stock up a little before the first of April.

The feeling appears to be that wage settlements will be made by states and districts rather than through any interstate agreement, as has heretofore been the case with the United Mine Workers. It is expected that perhaps Indiana and Illinois will make the same agreement.

The opposition to the check-off in some circles is not as strong as it was some time back. Old-time operators have not forgotten the terrible state of affairs that existed in the Central Competitive Field fifteen or sixteen years ago, when there was no United Mine Workers organization to hold the operators in check and keep them from price-cutting wars which ruined a great many of them. Operators feel that if certain working conditions, wages, etc., were paid to all mine laborers in certain competitive fields, that conditions would be better for all concerned.

Another angle to be taken into consideration is that a great many of the more conservative among the miners realize the trend of times and have already made up their minds to the effect that after some preliminary skirmishes they will have to take a reduction.

SOUTHERN ILLINOIS

Colder weather helped move a little of everything out of the Cartersville field last week. Screenings have been going fairly good and all steam coals have shown up better.

Domestic tonnage was figured the early part of the present week to be at its lowest ebb since any time last spring.

Movement is mostly toward Chicago. Railroad tonnage developed rather good the past week.

The Duquoin and Jackson fields are traveling along somewhat on the same lines as the Cartersville district, excepting perhaps they are not getting as much work. Prices are a trifle lower here and there. General conditions are far from satisfactory.

The Mt. Olive district has shown up better, with a movement of domestic tonnage to the Northwest and Kansas City. Steam sizes go on contracts. The domestic market seems to be about \$3 for all sizes, with screenings at \$1.75. Railroad tonnage is heavy.

The Standard situation does not seem to improve. Screenings are in a trifle better demand than any other size. Some mine run is being loaded for railroad. Domestic lump is unusually slow, while some steam lump is being loaded for storage. Considerable dissatisfaction is expressed in this field by miners over the unsatisfactory working time.

ST. LOUIS

Domestic business spurted some last week on account of the cold weather. Demand is mostly for small loads and cheaper grades.

Very little anthracite or smokeless is moving, while coke has shown up well, principally on account of talk of enforcement of the smoke ordinance.

General conditions are not satisfactory. No dealers anticipate putting in any great supply of domestic coal but the larger dealers are protecting contracts by storing a sixty-day supply of steam sizes.

Movement to Chicago is fairly good on Standard steam sizes. Retail prices are unchanged.

WESTERN KENTUCKY

There has been a slump in demand for all grades during the past week. Many of the large industrial concerns have stocked up, and other buyers lack confidence that there will be a strike or that prices will be any higher. The weakness alleged to be shown by the miners' unions is resulting in many buyers deciding that they will take a chance on short supplies.

Lump coal is very slow, and movement of mine run not heavy. While prices of screenings are being well maintained, it is largely due to the small production, rather than heavy demand. Mines are operating two to three days a week in most instances, and there is a continued shortage of screenings, resulting in their commanding a mine run price at the present time. Both mine run and screenings are selling \$1.65@2.

LOUISVILLE

Lump coal is a shade weaker than it has been, especially the grades that are not quite up to standard quality. Mine run is firm and screenings are holding even, there having been a slight reduction in western Kentucky screenings over the week. Car supply is ample and there is plenty of labor. The principal difficulty is securing orders for lump in order to make screenings.

It is believed that there may be a lull in the heavy demand that has been experienced for steam coal. Reserves are growing and the present increased demand is not for current consumption.

Retailers are reporting a little call for immediate use, but no early stocking demand is in prospect. However, they are not buying lump coal, as they are very anxious to reduce stocks in hand.

Northwest

Rush Orders and Threat of Shortage Follow Blizzard

Paralysis of Transportation Scares Dealers Carrying Meager Stocks—Docks Behind on Orders—Screenings Scarce, Price Advances—Industrial Situation Improves Slightly.

A SEVERE blizzard paralyzed Northwestern transportation systems last week and brought dock companies a flood of rush orders. Some country dealers are in a precarious situation as a result of carrying very meager stocks. Docks are behind in their orders. The growing scarcity of screenings has caused a price advance.

The industrial situation is showing only slight signs of improvement. There is not much reserve buying against the strike, although consumer interest is growing. However, the philosophy of letting tomorrow care for itself still prevails with most buyers.

MINNEAPOLIS

The worst storm in a number of years prostrated traffic in much of the entire Northwest during the past week. This stopped freight movement, and it took the docks several days to get back into operation. A portion of the district adjacent to the Great Lakes in northern Wisconsin was so badly tied up as to be threatened with a suspension of industry through inability to get coal moved.

The Head-of-the-Lakes and the Iron Range country probably had the worst of the storm, but the Twin Cities were practically without train service for twenty-four hours. Many passenger trains were annulled. Such trains as attempted to make their regular runs were hours late.

Following the storm came severe weather. All this must of necessity, mean a decided increase in consumption. Wholesalers have been unable to see much increase in their own sales, and have felt that the severe weather would merely reduce the amount held in consumers' bins at the close of the winter. But the prolonged severe weather is certain to compel additional buying, and a reduction of the stocks on hand at all points.

Consumers assuredly will not carry over as they did a year ago. But the present indications are that they must buy more coal, regardless of how they attempt to confine their purchases.

So far as the probable strike is concerned, it has no particular effect upon buying in this district. Buyers probably do not deny the certainty of a suspension, but they are more interested in deferring purchases as long as possible than they are in what may happen when the shut-down occurs.

As a result, there is no particular strength to the market. The prices of a month ago, when a cut of \$1 on dock coals was made, are usually prevailing. One or two concerns advanced their costs 50c. shortly after the cut, but they were not followed by others. There seems to be no ground for expecting any immediate bracing to the market, despite the outlook.

And the outlook is not regarded as certain to result in a suspension. The press has frequent articles to the effect that the administration will seek to bring about an adjustment of the difficulties. So in this section few coal buyers seem to be worrying much as to the effect of a strike. If it does not endure for more than six weeks, there will be ample coal carried over to fill all needs that could possibly develop.

MILWAUKEE

The market is almost at a standstill because of a series of cold waves and storms, which wrecked communications and isolated the greater part of the state. Little coal is moving out, and country dealers who may be short of supplies will have to wait until things clear up.

A drop of \$2 in the price of both Solvay and gas coke last week was caused by a desire to get rid of a heavy stock before navigation opens. Egg and nut Solvay now retails for \$13, and pea coke at \$10. Gas coke can be had at \$11.50 for egg and nut, and \$9.50 for small nut.

Coal prices are firmly held. There is still a scarcity of soft coal screenings, and it is evident that consumers of this grade of coal may have to resort to something else unless the situation changes soon.

DULUTH

An advance of 50c. a ton in soft coal has come about, together with the recent blizzard which thoroughly tied up the Northwest. This means a total advance of \$1 within the last month and a half.

Storm conditions have been so bad that it has been impossible to ship much coal from the docks. Only enough has been sent through to keep public service corporations and municipal heating plants running.

Present prices on Youghiogeny. Hocking and Splint lump is \$7, run of pile, \$6.50; and screenings \$4.50@4.75.

Owing to a decrease in freight rates on screenings to Minneapolis and St. Paul dock stocks are virtually cleaned up. Barely enough remains to take care of local markets. Industrial demand from Twin Cities is better.

Retail trade orders in Duluth are booked from ten days to two weeks ahead, and it has been impossible even to get stocks around the city because of the deep snow.

Country dealers are calling in vain for anthracite with which to satisfy the demands of their customers who waited until the storm broke before ordering. Cars for country shipments cannot be brought into the Duluth docks

except in one or two places, as snow drifts from ten to twenty feet high impede. Prices on hard coal remain firm. Egg is \$12.50; stove, \$12.80; nut, \$12.75; pea, \$10.80, and buckwheat, \$6.

Canada

TORONTO

The coal situation here has not so far been noticeably affected by the threatened strike. There appears to be little disposition to lay in bituminous stocks. It is evident, however, that when the supply now on the tracks is disposed of the market will be considerably firmer as coal cannot then be got at present prices. Demand for anthracite has lately been stimulated by severe cold weather, but the call for bituminous continues sluggish.

Quotations are as follows:

Retail—	
Anthracite, egg, stove and nut.....	\$15.50
Pea.....	14.00
Bituminous steam.....	9.25@9.75
Domestic lump.....	11.25
Cannel.....	16.00
Wholesale, f.o.b. cars at destination—	
1 in. lump.....	7.00@7.75
Slack.....	6.00@6.75

South

BIRMINGHAM

If anything, steam demand in the spot market has been somewhat softer the past week. Inquiry has been slack and very little new business was taken on by commercial mines. There is little activity in the bunker coal market, requirements being lighter than before for some weeks.

The same situation obtains in the domestic market. Unfavorable weather conditions continue to prevail. Winter has been so long delayed that retailers will, as a rule, not have to get into the market again this year, having ample stocks to run them, and orders for a few cars here and there constitute the only outlet for current production.

The railroads have again slightly increased the tonnage being taken on contracts and this is proving a boon to operations which are lucky enough to hold such agreements, and is the backbone of the movement from the commercial field. Furnace company mines are also producing a slightly increased tonnage as new stacks are being lighted, requiring a heavy output of coke and coal for company use.

Mine prices on steam and domestic coals have shown no change over a week ago, the range of prices then given being representative of the present market.

VIRGINIA

Mines are producing about 57 per cent of potential capacity. The output is heaviest on the line of the C. C. & O. where it is almost 80 per cent of capacity. In general the smaller mines are not operating, owing to low prices. The bulk of the output is on contract, but there is a little demand for steam coal, the call for prepared having undergone a slight decrease. Prices are undergoing no change.

Not more than 6,000 tons of coal per week are being converted into coke.

Eastern Inland

Strike Impetus Is Fading; Non-Union Fields Relied on

Unorganized Producers Still Active, but Prices Cease Upward Course—Stocks Probably Large—Domestic Business Fluctuates with Weather—Pre-Season Lake Shipments Meager.

THE temporary impetus given to the market by the approach of the strike date has lost much of its insistence. Non-union producers are still active, but there has been a check to the upward trend of their prices. The inference is that stocks are considerable. With the exception of railroads and public utilities, who are shopping around, the consumer shows an indifferent attitude to strike talk, secure in the belief that his requirements over present reserves will be amply protected after April 1 by the non-union operations.

Domestic coal is finding a weather market only, orders fluctuating with the severity of the temperature. The present year so far registers the smallest volume of pre-season shipment of Lake coal on record.

CLEVELAND

With less than a month remaining before the strike, the market continues a puzzle to sellers and operators. More coal is moving, inquiries are more numerous, but no keen desire to stock supplies is manifest outside of railroads and public utilities. The last two weeks of grace may serve to spur consumers into action, but many operators doubt if the buying movement looked for a few months ago will develop.

The average industrial user has a feeling that the strike, if it comes, will be neither long nor disastrous. He has a hunch he will be able to get non-union coal if a prolonged shutdown comes. That the subject is on his mind, however, is evident from the growing number of inquiries.

These inquiries and the larger number of sales are logical developments as a result of the better industrial activity in this district. They would have come to some extent at least had no hint of a strike appeared. The most important industries in Cleveland and other nearby points include metals, automobiles and parts. Iron and steel mill operations are at the highest rate of activity since December, 1920. Automobile output is growing as is that of parts. Present indications point to general industrial improvement in the spring. The one factor which may check the rate of improvement will be a shortage of coal.

Retailers report that householders are buying in small lots to piece out the season. Receipts of bituminous coal during the week ended Feb. 18 were the

largest for any week during the past twelve months, save one. Total number of cars received were 2,062. The week ended Feb. 25 shows a decrease of some 300 cars; divided, 1,404 to industries and 355 to retailers.

EASTERN OHIO

Output amounted to 322,000 tons during the week ended Feb. 25, or approximately 64 per cent of potential capacity for the five work days, Feb. 22 being a holiday. Production showed a daily average of 64,400 tons as against 62,000 tons during the previous week.

Association mines worked about 50 per cent of full time and produced about the same rate of capacity as that shown for the district. During the same week last year, this field produced 224,000 tons or at the rate of 44 per cent capacity, notwithstanding that pre-season shipping of Lake coal was well under way. The present year so far registers the smallest volume of pre-season shipment of Lake coal on record.

It is freely predicted that as soon as the Lake season gets under way this year, a shortage will develop rapidly in open-top cars, as this class of equipment is used most heavily in this region during the Lake season for hauling coal to the docks, and iron ore from the docks to furnaces. This assertion is upon the premise that the railroads have more "bad-order" cars on track at this time than ever before, and that they cannot get them repaired because of no funds or other adverse circumstances, therefore, with any appreciable upturn in general business, combined with the requirements for empty cars in Lake coal shipping, will inevitably evolve car shortages perhaps more serious than those usually experienced.

A summary of industrial conditions throughout this section during the past week reveals an upward movement in the iron and steel business of a more permanent character. Another outstanding feature is the gradual but steady increase in railroad traffic. Considerable optimism also prevails as to the impetus which will be given to business in the not far distant future when downward adjustments in both wages and railroad rates on basic commodities become a reality, principal among which is coal.

While the demand for coal has not assumed the proportions expected a few weeks ago, spot prices are holding firm with practically no change in the figures quoted last week.

PITTSBURGH

Inquiry for coal in this general district has fallen off rather sharply in the past week. The turnover in union-mined coal remains light as for a long time past, while Connellsville and other non-union coals are moving a trifle less freely. Prices have not definitely declined but have quite failed to score the advances that were expected. Connellsville steam coal is quotable at \$1.50 @ \$1.60 for mine run, or substantially as low as the open market has been, the main difference being that the distress

sales of a month and more ago have disappeared.

As the price is well below anything the unionized mines can do, there is not much concrete evidence of a shortage of coal after April 1 being expected. With the materially increased production of the past few weeks there has already been a considerable volume of stocking.

There are no fresh developments of consequence in labor matters. The position of the Pittsburgh district operators is simply that they have formulated a wage scale which they will discuss if desired with the local organization of the U. M. W., while they will not rejoin the Central Competitive Field for negotiations.

The market, made up largely of asking prices, remains unchanged.

DETROIT

Consumers are not coming into the market as actively as jobbers feel they should to make adequate provision for continuance of their fuel supply. There is no urgent demand for shipments.

Non-union have practically forced out of the market the coal from union mines, except for small shipments that apply on long-time contracts. The situation seems to support a theory that the steam coal buyers are depending on continuance of shipments from the unorganized territory, instead of building up reserves.

While the amount of bituminous sent to Detroit is not large, it is usually not difficult to find a few cars of free coal somewhere about town. Spot prices are firm at former levels.

NORTHERN PANHANDLE

Railroads continue to secure the bulk of the output, although inquiries are becoming more numerous owing to the probability of a strike. As a result of the additional demand shipments of steam coal are on a little larger scale, but as a rule most mines producing commercial fuel are marking time. Improvement is more noticeable at mines where there has been an adjustment of wages than at others.

COLUMBUS

Large users are taking advantage of the advanced knowledge of the mining situation and are buying gradually for stocking purposes. This is causing a better tone to the market.

Mine run is probably the strongest feature. Screenings are growing weaker with the exception of Hocking, where the production of lump is being reduced. The mild weather has not helped the domestic situation and retailers are gradually cleaning up for the spring season.

Hocking lump sells around \$5.75 @ \$6.25 and West Virginia splints, \$6.50 @ \$7.25. Pocahontas is \$8.75 @ \$9.25 with demand fairly good.

Public utilities are the most active buyers in the market at present. Railroads are also more liberal in their orders. A large part of the stocks being bought, however, come from West Virginia and Kentucky mines, because of the cheaper quotations. Ohio districts are not benefitting to any great extent.

The Hocking Valley is showing an output of between 22 and 25 per cent and the same figures are reported from Cambridge, Pomeroy Bend and Crooksville.

Cincinnati Gateway

Offerings Exceed Demand; Weakening of Prices Results

Topheaviness Has Usual Sequel—High Volatile Fines a Possible Exception—Domestic Buyers Grow More Cautious—Output in Southeastern Kentucky Gets Stimulus.

WEAKER prices have followed a topheavy market, as offerings are in excess of current demand. High-volatile fines are a possible exception to this. The end of the domestic season shows an increasingly cautious buying policy, as no one wants much of a carry-over on April 1.

Production in southeastern Kentucky has been greatly stimulated by heavier shipments from industrial-owned operations. In the Kanawha field more mine resumptions on lowered wage scales have been observed.

CINCINNATI

Utilities and heavy steam users are in the market but they are disposed to shop around rather than buy without question. Other consumers are now buying sparingly. During the fore part of last week some of the West Virginia and southeastern Kentucky producers attempted to shove the price of nut and slack to the high figure of mine run. However, the buyers were disposed to go up to \$1.25 for top-grade nut and slack, but no more. Most of the sales were made a dime lower. Kentucky mine run was weak and West Virginia lower than for some weeks past.

The bottom has dropped out of the domestic demand and splints are reduced 25c@50c. Good gas block is under \$2.

Smokeless operators still claim to be behind in their orders, but there are cars standing at the scales awaiting shipping directions. Mine run holds to the set price but is weak underneath. Screenings are hard to move and while quotations are still at the old figures there has been a quantity of this sold under \$1.

Retail business perked up a little, due to colder weather, although deliveries were of small tonnage. Prices quoted were: Smokeless lump, \$8; nut, \$7.50; mine run, \$6.50@6.75; slack, \$5. Bituminous lump, \$6.50@6.75; mine run, \$5.75; slack, \$4.75@5.

HIGH-VOLATILE FIELDS

KANAWHA

What little increase there was in production during the closing days of February was due to an adjustment of wages at a few mines, with a prospect

that some of the larger concerns would also resume operation on a like basis. Producers have virtually served notice that the present wage scale will not be continued after April 1. Steam coal has nosed out domestic in point of demand. Slack is growing scarce owing to the limited amount of coal prepared.

LOGAN AND THACKER

Although there has been a marked increase in the Logan production, with shipments amounting to about 80 per cent of capacity, yet there has been little or no change in price. Steam is the source of more inquiry than any other grade.

In the Williamson field production is twice as large as it was during the corresponding period of 1921, the output now approximating 125,000 tons. Much of the coal is flowing to Western markets in response to a somewhat heavier steam demand. Railroads are gradually increasing their requirements.

NORTHEASTERN KENTUCKY

Fear of a strike is undoubtedly contributing much to the increased shipment, which now amounts to about 52 per cent of capacity—a larger tonnage produced than at any time in the last year. There is a little better demand for steam fuel aside from the possibility of a strike. Domestic grades are not in so strong a position, owing to warmer weather.

SOUTHEASTERN KENTUCKY

Harlan County produced the largest tonnage in its history in January, and estimates for February show slight increases over this. The major portion of this increase is in contract takings and a larger output of industrial-owned concerns who are stocking up for the strike. There is better demand for screenings and mine run. The former is rapidly growing scarce and prices are up.

Call for domestic is at a minimum, but there is a slight increase from public utilities for 2-in. lump and egg.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

New River mines are only working two or three days a week. More mine run is being handled, some of it for storage purposes, but at no advance in price. Although Tidewater shipments are fairly large in volume, the textile strike in New England has affected shipments.

Winding-Gulf is maintaining four days per week in its loading average and at some operations labor shortage is commencing to develop. Demand has stiffened to some extent but there has been no appreciable strengthening of prices.

POCAHONTAS AND TUG RIVER

Pocahontas production is still climbing upward, the average weekly output being about 325,000 tons. There is a fairly active demand principally for steam coal for storage purposes, but there is also a somewhat better demand

due to increased industrial activity. Prepared is not quite so strong, owing to moderate weather conditions.

Tug River production is heavier as the result of an increased steam demand. The output averages more than 100,000 tons a week, with a car shortage retarding the output to some extent. The Norfolk & Western has succeeded in borrowing open-tops from another road, however, and is relieving the shortage to some extent.

West

SALT LAKE CITY

Despite the fact that the weather is quite mild dealers report that business is still "good." Some difficulty is being experienced in getting the larger sizes.

Opinions differ regarding the possibility of a general strike in this field. In some quarters it is declared that a strike is bound to come and in others that as Utah is not tied up with the miners' national organization we shall have very little trouble, especially as the Utah mines are working so far below their capacity as a result of market conditions.

DENVER

Five hundred Weld County miners are on strike and eight lignite mines are closed as the result of some of the miners' refusal to accept a 30 per cent wage cut similar to that in the bituminous fields. The reduction brings wages back to the 1917 scale.

There has been no violence and no request for help has been made to the state authorities. Notice of the wage cut, which was authorized by the industrial commission, was posted at the Puritan mine. Company officials said that owing to light demand for coal it might be several weeks before an attempt would be made to resume operations.

Except for the disturbance in the northern lignite fields, Colorado's output is gradually getting back to normal. Slack is still weak, but cold weather is gradually straightening out the undercutting of prices. Lignite steam is \$3.20, while lignite lump is \$4.

Bituminous lump is \$5 at the mine against \$6 a year ago. Slack is \$2.50 at the mine, while Walsenburg and Routt steam bring \$2 and retail for \$5.45.

KANSAS CITY

The only big snow storm of the winter visited this section last week. The temperature hovered around zero all week and dealers were rushed to care for the orders that poured in. The railroads were hampered by the snow and train service was impaired. There was no material change in prices and as coal for storage has generally been put in the demand for steam has not kept pace with the domestic grades.

The Southwest is in a peculiar position; if Howat regains his power—and some doubt if he has lost it—it will mean the same old strife, and if a mining scale is made with the regular organization there is some doubt if it would enable the Southwest to compete with the thicker coal seams east of the Mississippi and the Colorado fields.

News Items From Field and Trade

ALABAMA

J. J. Forbes, coal-mining engineer of the Bureau of Mines, is collecting data for the preparation of a bulletin on sampling and analyses of Alabama coals. This bulletin will give information regarding the coals of the Birmingham district. One hundred and forty-nine face samples of coal have been taken in thirty-four mines in Alabama, representing fourteen different coal beds.

ILLINOIS

The Perry County Coal Corporation, Coulterville, has filed notice of change of name to the Perry Coal Co., at the same time increasing its capital from \$255,000 to \$1,250,000 for proposed expansion.

The mine at Ward has been unsealed by Robert M. Medill, Director of Department of Mines of Illinois. It is also understood that the property has been transferred from W. A. Perrin of Herrin, who had it on lease, to the Aladdin Coal Co., of St. Louis, which operates mines at Tamaroa, Pickneyville and Cutler. The fire at the Ward Mine has been extinguished.

James Walker, formerly county mine inspector, is sinking a new mine for local capital on the Turner farm at Crab Orchard in Williamson County. New homes on the property are planned for the miners.

Peabody Mine No. 3 broke the Williamson County record for one month, in December, with 75,850 tons of coal. The mine is twenty-two years old, which is a record for a mine of that age and size in these particular times.

In one day in January Mine No. 1 of the Bell & Zeller Coal Co. broke its previous record of coal hoisted. It had a 45-minute interruption that day and came within 34 tons of the world record made by the Orient Mine, a few miles away. The first record was made with an interruption of only 4 minutes. Could the Zeigler Mine No. 1 have the 41 minutes which the Orient Mine had they would not only have broken the world record but would have set a mark that it would have been a difficult matter for any mine to pass. The total hoist on this day was 6,716 tons in 7 hours and 15 minutes, while the world record is 6,750 tons in 7 hours and 56 minutes. Franklin County now has the two largest producing mines in the world.

Fire which raged in the Union Mine of the LaSalle County Carbon Coal Co., caused the loss of twenty-four mules, as well as destroying a greater part of the interior structure of the mine before it was put under control.

The American Coke & Chemical Co., of Chicago, has purchased 5,600 acres of undeveloped coal land in South Twigg township near McCleansboro. This move is taken to be the opening wedge of much development work in that district.

Fred Harwood, traffic manager of the Illinois Coal Traffic Bureau, has gone to California for his health.

Leo Romanski of the Atlas Coal & Coke Co., Chicago, is on an extended vacation in the South.

Work has been resumed at the mine of the Illinois Sixth Vein Coal Co., at Pinckneyville, after having been closed down for some months. The affairs of the company are now in court and the mine is being operated by a receiver appointed by the Illinois District Court.

Destitution is rampant among the miners in southern Illinois. With almost one-half the mines in the Williamson and Franklin fields idle and others working only half time, thousands of families have next to nothing to eat, have little to wear, and have no credit at the company stores, and are even unable to arrange for fuel. Some relief has been offered by the cancellation of the miners' assessment through some locals where the working time is next to nothing. Committees of miners are soliciting aid from the public in the interest of sufferers.

E. J. Scott of St. Louis, president of the Scott, Smith & White Coal Co., was in Duquoin recently, on an inspection tour of the strip mine which that company has in operation at that place.

Following the course of many coal mining concerns in the state, the United Electric Coal Co. has sent a letter to each of its employees near Danville telling them that they would by necessity have to take a reduction in wages April 1. The letter explained that this was essential in the operation of their mines for with the present wages they could not compete with the mines in Alabama, Kentucky and Virginia. The Old Ben Coal Corporation and other large operating companies have recently sent similar letters to employees.

Major William R. Coyle, president of the American Wholesale Coal Association, was the guest of honor recently at a luncheon tendered by the Chicago Wholesale Coal Shippers' Association, in the Fraternity Room of the Great Northern Hotel.

The Price Mine near Rock Island, it is understood, will be closed and abandoned. The vein of coal has been practically exhausted in the last fourteen years.

INDIANA

The Wizard Coal Co. of Terre Haute, recently filed a final certificate of dissolution at the secretary of state's office. Arrangements are being completed for the opening of the first commercial coal mine near Shoals. The mine will be about three miles east of Shoals and will be operated by electricity.

KANSAS

The Central Coal & Coke Co., has acquired leases on 10,000 acres and is reported to be figuring on a total of 50,000 acres of coal bordering on both sides of the Kansas-Oklahoma line. Other leases have been taken at \$35 per acre. The center of the new field, as it is outlined now by prospectors, lies about 20 miles southeast of Edna, Kan.

KENTUCKY

Clerk Menzies of the United States District Court in Covington recently returned from a visit to Bell County, where he went to arrange the sale of the Cumberland Railway to satisfy a lien held by the Guaranty Trust Co., of New York City. The railway is said to be worth about \$50,000 and is the only outlet of several mines that have been opened on it.

Fred M. Sackett, of the Byrne & Speed Coal Co., a large operator of Kentucky, is one of the backers of a movement for the formation of a Kentucky Club of the Old Colony Club, Mr. Sackett being a member of the advisory board of the national body. Club rooms are to be installed in the Seelbach Hotel, Louisville.

George Vankirk, of the American Coal & Feed Co., has filed notice with the Jefferson County Clerk, in which he affirms ownership of the concern.

Chief of Detectives William DeForester, Louisville, has sent out a warning relative to checks made out by a cold check artist, operating as the Long Branch Coal Co., of Earlington. There is no such concern, but a number of such checks have been passed in the state.

The Service Fuel Co., Greenville, capital \$100,000, has been chartered by A. D. and Carlisle Kirkpatrick and J. L. Rogers.

Passing on preliminary motions in a suit of the Harlan Coal Co. against the Wheeler Coal Co., operating mines in Lee and other counties of eastern Kentucky, a Louisville judge recently sustained a demurrer to that part of the petition by which the Harlan company sought to recover \$230,400 in commissions and allowed to remain in the petition that part by which the plaintiff seeks to recover \$58,000 in commissions. The larger amount was a claim for commissions for selling coal not yet mined and which may be produced by others than the Wheeler company.

MINNESOTA

The Great Lakes Coal & Dock Co., of Minneapolis, has increased its capital stock from \$800,000 to \$900,000, in a recent amendment to its articles of incorporation.

Stanley B. Houck, counsel for the Twin City Coal Exchange, Minneapolis, has returned from a trip to Washington, where he conferred with national coal men, on the prospects for the spring.

The Minneapolis Atomized Fuel Co. has filed articles of incorporation with \$100,000 capital stock. G. H. Reeves, a well-known coal man, Simon Kruse, proprietor of the Radisson Hotel, Will C. Brown and Frank Boutin are incorporators.

MISSOURI

The strike recently called by the Howatt board at the mine of the United States Coal Co., Alston, proved a fizzle. Five men quit and others were on hand to take their places. Howatt claimed the mine had violated the contract by discharging several men.

G. E. Hildebrand, of Kansas City, is reported to have acquired the 1,421-acre tract known as the Swift Ranch near Paris, for \$70,000. Coal was previously mined on the tract but operations are reported under way for a big mine production later.

NEW YORK

The Coal Trade Club of New York held a luncheon on March 1 at the Whitehall Club, New York City, about 75 coal men being present. The members were addressed by Douglas MacArthur, manager of the Seaboard By-Products Co., who described the manufacture of byproduct coke. Mr. MacArthur stressed the need of higher quality coal for this section and urged greater familiarity of salesmen with the product they handle. Mr. Hermann, chairman, recommended the formation of an exchange to draw up a "Code of Ethics" to be observed by members in their coal transactions. This idea met with the club's disapproval, the members feeling that their experiences in the past with associations and exchanges were not such as to recommend the idea of a new organization. The club holds a luncheon on the first and third Wednesday of each month.

Dr. Henry M. Payne left last week to look after some professional work in Idaho. He will also spend a few days in the California oilfields. En route he will fill his annual engagements as non-resident lecturer at several of the mining schools and universities, returning to New York about April 1.

The Buffalo Wholesale Coal Association held its annual banquet on Feb. 20, with about 65 present, including guests from Pittsburgh and Toronto.

OHIO

By an arrangement effected by the Darby Coal Mining Co. and the United Fuel & Iron Co., a joint selling company has been established under the name of the Darby-Old Virginia Coal Co. A new office has been opened in Spartanburg, N. C., and other offices already established are in Pittsburgh, St. Charles, Va., and Cincinnati. The latter will continue under the style of the Darby Coal Sales Co.

Upon the application of Arthur N. Quillin, vice president and director of the company, Judge Scarlett has named Smith W. Comley receiver for the Broad Run Coal Co., Columbus, under a bond of \$10,000.

Governor Harry L. Davis and Percy Tetlow, state director of industrial relations recently went to Nelsonville to make an investigation of conditions among the miners of Athens County with a view of giving relief. A meeting of representatives of townships and various municipalities was called to hear reports from all sections.

The Griffing Co. has been incorporated with a capital of \$200,000 to deal in coal stocks. William F. Griffing, the head of the company is selling the stock of the W. E. Deegans Coal Co., of Huntington, W. Va. Incorporators of the company are William F. Griffing, R. E. Greiss, M. K. McGaughey, and C. B. Wolfe.

The Young Ice & Coal Co., Cleveland has been chartered with a capital of \$25,000 to retail coal by R. H. Riffe, James W. Iurk, Golden E. Boyd, James A. Clinton and L. P. Smith.

The Colonial Fuel Co., Columbus, chartered recently with a capital of \$25,000 will operate a retail yard, taking over the business formerly conducted by the Colonial Coal & Supply Co., Walter H. Plant is president and general manager.

It is rumored that negotiations are under way for the purchase of the holdings of the Lorain Coal & Dock Co., with headquarters at Columbus, by the Consolidation Coal Co.

P. O. McIntire, formerly president of the **P. O. McIntire Coal Co.**, is now vice-president of the **Astel Coal Co.** Headquarters are in Cleveland.

Fred Saal has been appointed manager of the Lake shipping and fuel department of the **Pittsburgh Coal Co.**, with offices in Cleveland.

The State Director of Industrial Relations, who is at the head of the Ohio Mining Department, reports an improvement in the mining situation in the State during the past few weeks. A part of this improvement is attributed to the appeal of Governor Harry L. Davis to Ohio people to use Ohio-mined coal in all cases.

Presenting claims aggregating \$12,983.47, **W. H. Warner & Co.**, the **H. W. Jenkins Coal Co.**, the **John M. Taylor Coal Co.** and the **Gibraltar Coal & Coke Co.**, all Columbus concerns, filed suit in Federal Court recently, asking that the **Elks Coal & Coke Co.** be adjudged a bankrupt. **Don Hamilton** was appointed receiver for the company.

Abandoning its Kentucky charter because of taxation and other oppressive features the **Logan & Kanawha Coal Co.** has re-incorporated under the Ohio Laws with a capitalization of \$100,000. **F. E. Legg**, **S. E. Legg**, **W. I. Donnelley**, **S. E. Stewart** and **E. P. Measham** are named as the incorporators.

Joseph Briscoe, last year's president of the Cincinnati Coal Exchange has resigned as the manager of the coal sales department of **Eaton Rhodes & Co.** **J. L. Crosby, Jr.**, head of the domestic coal sales department and **L. Bersinger** also have resigned.

OKLAHOMA

The **Peabody Coal Co.**, of Chicago, has opened an Oklahoma City office with **T. L. Rooks**, formerly with the **Kansas City** office, in charge, to handle semi-anthracite and bituminous coals.

A new mining town has been opened up 19 miles southeast of Nowata, known as **Gunther**. The owner, **A. C. Gunther**, is sinking a big mine and building up the town.

The **Frisco R.R.** is reported to be surveying a line from **Vinita** through a new coal field near **Bluejacket**, which may eventually end at **Pittsburg, Kan.**

The old strip mines near **Oologah**, **Rogers County**, are to be opened again soon. It is said that the advancing costs of natural gas for fuel purposes in industrial plants is such that operation of the coal mines will be found profitable in furnishing coal for such uses.

The **Messine Coal Co.**, of **Haileyville**, has increased its capital stock from \$25,000 to \$75,000 and an amendment has been filed with the secretary of state at **Oklahoma City** making this change in its articles of incorporation.

PENNSYLVANIA

The **Upper Hillville Mine** at **West Monterey**, has been sold to the **Jo Ann Coal Co.**, **Pittsburgh**, together with 400 acres of coal land. The property was formerly owned by **Frank Williams & Co.**, **Buffalo**, and operated by that concern about eleven years. After the failure of the company, the receiver sold the property, the buyer being **C. L. Stevens**, of **Pittsburgh**.

The Auditor General's Department believes that within the next sixty days state coal tax payments will begin arriving at **Harrisburg**. The department is taking steps to secure settlements on amounts of taxes due by the anthracite producing companies, under the reports now on file. A few small payments of tax have been made by minor companies. The larger producers have filed reports and the department will ascertain from them what amounts of tax are due. The question of the constitutionality of the anthracite tax law will be argued in **Philadelphia** in April if the paper books are prepared in time for that month and if the case cannot be heard then it will be placed on the list for argument at **Harrisburg** in May.

A mine cave, resulting from robbing of pillars in the big vein of the **Beaver Meadow colliery** of the **Lehigh Valley Coal Co.**, recently dropped a considerable area of land between **Leviston** and **Coleraine**. It is estimated that the surface went down from 18 in. to 5 ft. by the subsidence.

The **Pittsburgh Testing Laboratory** announced, at its recent annual meeting, the retirement of its president, **George H. Clapp**, his reappointment as a member of the board of directors of the company, and the election of **Colonel James Milliken** to the presidency.

Notwithstanding the industrial depression, strikes and other impediments to the coal business, the annual report of the Inspector of the **Thirteenth Bituminous Inspection District** shows that the gross production of the mines in the district fell off only about one-fourth during the past year. The district comprises 107 mines normally, but during the period covered by the report only 93 were in operation, 14 remaining idle throughout the year. Total production in 1920 was 4,500,000 tons, or approximately 1,000,000 tons more than in 1921. During 1921 five new mines were opened and two old tipples were abandoned.

The coroner's jury who investigated the death of 25 miners in the **Gates Mine** disaster of the **H. C. Frick Coke Co.** found that their deaths were accidental and resulted from a blown-out shot, exonerating the **Frick** company.

The **American Coke Corporation** has fired up 50 out of 240 ovens at the **Martin** plant, which has been entirely idle for several months. It has also fired 20 additional ovens at the **Orient** plant, making 171 of 430 ovens at that plant now in blast.

The **Pennsylvania State Supreme Court** has overruled the assignments of error and affirmed the judgment of the **Common Pleas Court** of **Indiana County** in the case of **Carrie S. Kelly vs. Watson Coal Co.** The opinion holds that the evidence shows that the husband of the claimant met his death through an accident while at work for the defendant company. The board allowed the compensation and the lower court affirmed its decision, the court rules and adds that "there is no merit in appellant's complaint concerning the alleged incompetency of the testimony."

The **Workmen's Compensation Board** has dismissed the petition for a review of the compensation agreement, filed by the claimant, **Felix Kosnovich**, **Mt. Carmel**, against the **Lehigh Valley Coal Co.** The opinion in the case states that **A. E. Lewis**, referee, awarded compensation for the loss of the use of the claimant's right leg. The defendant company appealed and the board sustained the referee. The defendant appealed to the court of common pleas of **Luzerne County** and the court referred the record back to the board, holding that the evidence did not support the finding that the claimant had lost the use of his right leg. The dismissal is made without prejudice to the claimant.

Among notices of increases in capital stock, filed at **Harrisburg** are the following companies: **Sterling Coal Co.**, \$270,000 to \$500,000; **J. S. W. Holton**, president, **Philadelphia**; **Madeira, Hill & Co.**, \$1,500,000 to \$1,812,500; **P. C. Madeira**, president, **Philadelphia**; **Mason-Adams Coal Co.**, \$34,800 to \$39,600; **J. W. Mason**, president, **Philadelphia**.

Central Pennsylvania loaded 58,508 cars of coal during January, as compared with 52,890 cars for December. The daily average was 2,340 as compared with 2,034. Increased production was particularly noticeable the last week of the month, when the average daily loading amounted to 2,900 cars. Reduced to tons, the output was 3,247,194.

The **Hillman Coal & Coke Co.**, has started producing coal at the **Griffin No. 1** plant at **Grays Landing**, near **Masontown**, which has been idle since last spring.

The **Republic Iron & Steel Co.**, is operating the **Republic** mine three days a week, instead of two days as for several weeks past.

Judge **Wilhelm's** decision permitting the lease of the holdings of the estates of **John Gilbert** and **Silas H. Wentz**, in the **Moore** and **Miller**, strip and **Conrad Mertz** tracts of land near **Gilberton** and **Shenandoah** Boroughs will mean much to that section, as at least 10,000,000 tons will have to be mined within 15 years to comply with the terms of the lease and the extension of the present operation of **Gilberton Colliery** will be but a matter of little time as the workings, etc., can be utilized to work the new areas and take out the coal.

The **Mason-Adams Coal Co.**, a **Philadelphia** retail house, will increase its capital from \$34,800 to \$39,600.

The **Sterling Coal Co.**, operating in **Cambria County** and having headquarters in **Philadelphia**, will increase its capital stock from \$200,000 to \$500,000.

H. R. Reinhardt, engineer for **Northumberland County**, has reported to the county commissioners that anthracite lands in the county are worth \$91,000,000. This is \$67,000,000 more than the present valuation for tax purposes. The **Monroe-Sekol** report in 1919 set \$117,000,000 as the value of coal lands for tax purposes, but this figure was set aside.

WEST VIRGINIA

Plans for the assessment of coal properties were formulated at **Huntington** recently at a conference for the assessors of the coal producing counties of southern **West Virginia** with officials of the state tax department at **Charleston**. Entering into the question are: Market value of coal acreage, stage of development, accessibility, quality and quantity of coal. It was determined that partly developed territory is worth about four-fifths as much as developed acreage, and that undeveloped territory is worth about two-fifths as much as developed areas.

Following the purchase of the bonds of the **Morgantown & Wheeling Ry.**, operating on **Scott's Run** in **Monongalia County**, by **Samuel Purselove**, of **Cleveland**, identified with the **Purselove** interests of that city, Mr. Purselove has been appointed receiver of the road, succeeding **Raymond E. Kerr**, resigned, and under whose management the indebtedness of the company has been very much decreased. As of Jan. 31, 1922, the total liabilities of the company were \$1,294,191.54. The **Morgantown & Wheeling** is soon to pass into the hands of the **Monongahela Railway**, that being the natural outlet for the **M. & W.**

Charles F. Ice, formerly with the **Consolidation**, but now president of the **Penn Coal & Realty Co.**, with headquarters at **Queen Shoals**, was a visitor in the **Fairmont** regions a few days ago.

J. J. Lenhart has been appointed as sales manager of the **Elk Coal & Coke Co.** of **Charleston**. Mr. Lenhart was formerly identified with the **Four States Coal Co.**

The **Stone Mountain Coal Co.** has started work on the rebuilding of the tippie and conveyor destroyed early in 1921, by fire. This company was made the center of attack by sympathizers of the men on strike in the **Mingo** field and the tippie and conveyor set on fire last spring.

Further development of coal territory in the **Monongalia** field is presaged by the organization of the **Sutton Gas Coal Co.**, of **Morgantown**, which is capitalized at \$75,000. Principals in this company are **G. J. Cohen**, **Charles Neese**, **W. L. Barber**, **Arthur C. Lorant** and **H. G. Hartman**, all of **Morgantown**.

The **Puritan Coal Corporation** will soon be in a position to begin shipping from the head of **Pigeon Creek** in the **Williamson** field. This land is owned by the **Kountz** interests of **New York** and has been leased to different concerns, the **Norfolk & Western** having built an extension up **Pigeon Creek**. The company now has its tippie well under way, with much of the equipment used in the preparation of coal also installed.

A visitor in **Charleston** a few days ago was **Fred Legg**, of **Cincinnati**, president of the **Logan & Kanawha Coal Co.**

W. E. Watson, president of the **Fairmont & Cleveland Coal Co.** has returned from a few days' business sojourn in **New York** and **Pittsburgh**.

Brooks Hutchinson, of **Fairmont**, an executive of the **Rich Creek Coal Co.**, has returned to his headquarters after a business trip to **New York**.

J. Q. Arbogast, of **Kingwood** prominently identified with the **Heather Run Coal Co.**, has returned from a business trip to **Chicago**.

ALBERTA

J. M. Mackie, president of the **Hillcrest Collieries**, operating a mine in the **Crow's Nest** Pass district, states that owing to the high cost of labor American coal is driving the **Crow's Nest** Pass product from the market. The mines in the district have been working scarcely half-time on account of the influx of coal from the American mines.

WASHINGTON, D. C.

The appropriation bill carrying funds for the Department of Commerce for next year carries the usual appropriation of \$15,000 for the **Bureau of Standards** to investigate mine scales, including coal mine scales to determine their accuracy.

The Department of Commerce has decided to widen its study of coal storage to include spontaneous combustion in cargoes and bunkers. It is believed that the fire hazard in cargoes and bunkers can be reduced very materially but before making any suggestions the department will gather the best available thought on the subject. Use is being made of such data as is available of the study made by the **Mercantile Marine Department** of the **British Board of Trade**.

F. J. Katz, who has been in charge of mineral statistics for the Bureau of the Census during the time that the 1920 returns were coming in has completed that work and will resume his duties with the U. S. Geological Survey. He specializes in work on abrasives and on metallics generally.

T. W. Vaughan, who has been a member of the geologic staff of the U. S. Geological Survey for many years retired from most of his active duties on March 1. He was succeeded as chief of the coastal plains section by **L. W. Stephenson** and as chief of the West Indian geological surveys by **W. T. Woodring**.

In consideration of the Navy Department appropriation bill Secretary Denby has advised the House Appropriations Committee that further funds for the Navy in developing coal in Alaska be not provided for the Navy Department but that they be given to the Interior Department in the interest of economy. The Alaskan Coal Commission which has been investigating Alaskan coal under a million-dollar appropriation will probably make its report in April.

Colla H. Livingstone, vice-president of the American National Bank of the District of Columbia, who was formerly associated with the late Senator Elkins of West Virginia, before the latter's death in the development of coal lands and mining in West Virginia, was indicted for fraud against the Government as former president of the Virginia Shipbuilding Co., in connection with Charles W. Morse and others in the shipbuilding industry.

The Supreme Court directed a re-argument on April 10 of the appeal of the minority stockholders in the Reading coal dissolution case. The re-argument will be on the question whether the decree of the District Court of Pennsylvania is in conformity with the decision of the Supreme Court ordering dissolution of the alleged Reading coal combine.

Association Activities

Northern West Virginia Coal Operators' Association

Although desiring to relinquish the presidency of the association, **A. Lisle White**, of Clarksburg, was prevailed upon to accept another term and was re-elected at the annual meeting held in Fairmont during the latter part of February. Other officers were re-elected as follows: **George S. Brackett**, of Fairmont, treasurer; **John A. Clark, Jr.**, of Fairmont, secretary; and **E. E. McCullough**, labor commissioner. Comparatively few changes were made in the board of directors, vice-presidents and members of the board for the respective districts in the association being chosen as follows:

Clarksburg District—**C. J. Ryan**, vice-president; **J. M. Orr**, **Daniel Howard**, **A. Lisle White** and **J. H. Callahan**.

Elkins District—**Everett Drennen**, vice-president; **Lee J. Sandridge**, **A. Spates Brady** and **Benjamin Bissell** and **W. H. Greene**.

Fairmont District—**Brooks Fleming, Jr.**, vice-president; **J. A. Clark, Jr.**, **A. C. Beeson**, **C. H. Jenkins** and **G. E. Peddicord**. **Grafton District**—**David Williamson**, vice-president; **F. J. Herman**.

Kingwood District—**T. W. Guthrie**, vice-president; **J. V. Gibson**. **Morgantown District**—**S. D. Brady**, vice-president; **B. M. Chaplin**. Directors at large: **W. C. Dobble**, **J. Edgar Long**, **C. D. Robinson**, **H. M. Crawford**, **J. W. Devison** and **J. P. McCune**.

President White in his annual report laid special emphasis on the effort of the advisory board to secure an adjustment of wages and in the course of his report made one or two significant statements, one of which was as follows: "This policy pursued by our labor in northern West Virginia (refusal to adjust wages) has meant not only a loss of a large amount of business naturally tributary to this section, but now threatens, unless promptly remedied, almost complete loss of business to this territory for both operator and miner if contracts for the coming year cannot be made on the basis of a competitive wage scale."

Monongahela Coal Association

A meeting of the executive committee of the newly organized association was held in Morgantown in February to perfect details of the organization.

The purpose of the meeting was for a

general discussion of conditions now existing in the territory covered by the members of the association, which includes all mines in the territory along and adjacent to the lines of the Monongahela Railway and its lines tributary thereto between the West Virginia-Pennsylvania state line and the southern terminus of the main railway line.

The purposes for which the association was formed are for the ascertainment and compilation of data directly or indirectly bearing on the conservation, protection, transportation and utilization of coal and its products, the promotion of the best interest of the coal industry in the territory embraced, the efficient enforcement of the State and Federal laws pertaining to mining labor and the property rights of mine operators, and encouraging all movements having in view the safety and welfare of the men employed in and about the mines.

Traffic News

The Southern Appalachian Coal Operators' Association, of Knoxville, has complained against unreasonable rates on bituminous coal from mines in eastern Tennessee and southeastern Kentucky to Louisville and adjacent points.

The Dewey Portland Cement Co., Kansas City, Mo., alleges unreasonable rates on slack coal from the Henryetta group of mines in Oklahoma and mines in the Tulsa group to Dewey, Okla.

The American Fuel Co. of Utah, alleges unreasonable rates on coal from Sego, Utah, to points in California, Nevada and Utah.

The I. C. C. has decided that the rates on mine run bituminous coal from certain mines in the Clinton and Brazil districts in Indiana to Clinton, Mt. Silica and Brazil, Ind., during Federal control were unreasonable, and awards reparation to the Clinton Paving Brick Co., which complained of the rates.

In the complaint of the Roundup Coal Mining Co., the commission holds that the rates on coal from Roundup and Geneva, Mont., to destinations on the Chicago & Northwestern; Chicago, St. Paul Minneapolis & Omaha and Minneapolis & St. Louis roads in the Dakotas are unreasonable. New rates of from \$3.70 to \$4.05 a ton are prescribed, effective May 18.

The Spring Valley Coal Co. has requested the I. C. C. to grant a re-hearing in this case in which the commission recently found that rates from the third vein Springfield and Belleville districts on coal to the Northwest were prejudicial, on the ground that the commission erred in fixing differentials between various mines and in denying jurisdiction over intrastate rates involved.

The Colorado Fuel & Iron Co., of Denver, has complained against unreasonable rates on coke breeze from El More Coke Ovens, Col., to Englewood, Col.

The I. C. C. has dismissed the complaint of Theo. A. Leber, involving rates on anthracite from St. Clair, Pa., to Port Reading, N. J., as the parties in interest have reached an agreement.

The Hazard Coal Operators' Exchange has withdrawn its complaint which alleged that the L. & N. had failed to furnish transportation for recently developed coal fields in eastern Kentucky.

The Supreme Court, in a unanimous opinion delivered by Chief Justice Taft, upholds the right of the I. C. C. to raise intra-state rates to the level of interstate rates in order to guarantee the railroads a fixed rate of return and in the general interest of an adequate transportation service. The cases decided were those of Wisconsin and New York, which contested the right of the commission to interfere with the State rates.

The Baltimore & Ohio Railroad Co. has announced a reduction of towing charges to and from the St. George and Arlington coal piers. The new charge will be 10c. per ton, minimum 200 tons, net or gross as rated, which service includes in-docking and out-docking when the towing service is performed by the St. George Towing Line.

The complaint of the Northwestern Traffic & Service Bureau, involving rates on soft coal from Alger, Wyo., to Grand Junction, Ia., has been dismissed, as the complainant has been satisfied.

In the complaint of the West Kentucky Coal Bureau, the I. C. C. on further hearing has modified its former findings in order to permit the establishment of a rate of not more than \$1.985 per ton on coal from western Kentucky via Thebes, Ill., to Festus and Crystal City, Mo., provided such rate is not exceeded at intermediate points.

The Fairbanks Co., of New York, has complained to the I. C. C. against unreasonable rates on coke from Everett, Mass., to Binghamton, N. Y.

Recent Patents

Apparatus for Underground Pumping. Pierre Loubet, Paris, France, assignor to Société Hue Frères et Loubet, Paris, France, 1,401,620. Dec. 27, 1921. Filed July 20, 1920; serial No. 397,744.

Coal-Mining Skid. Thomas P. Santarelli, Coal Creek, Colo., 1,405,337. Jan. 31, 1922. Filed Sept. 14, 1920; serial No. 410,307.

Front Head for Rock Drills. Carl P. Beaver, Lynch, Ky., assignor to Ingersoll-Rand Co., Jersey City, N. J., 1,403,284. Jan. 10, 1922. Filed July 22, 1920; serial No. 398,384.

Means for Cutting Kerfs in Mining. John M. Christine, Ford City, Pa., 1,404,835. Jan. 31, 1922. Filed Jan. 14, 1920; serial No. 351,314.

Coke-Oven Structure. Joseph Becker, Pittsburgh, Pa., assignor to The Koppers Co., Pittsburgh, Pa., 1,404,336. Jan. 24, 1922. Filed Jan. 26, 1920; serial No. 354,176.

Clamshell Bucket. Daniel Ferry, Pittsburgh, Pa., 1,404,515. Jan. 24, 1922. Filed Feb. 21, 1921; serial No. 446,668.

Mine Ventilator. Ezekiel C. Condit, Silverton, Colo., 1,404,742. Jan. 31, 1922. Filed April 4, 1921; serial No. 458,418.

Obituary

Fred Emery, 60 years old, wealthy resident of Scranton, died recently at his home. Mr. Emery was the inventor of a coal separator.

T. Percy Bryan died recently at his home in Kansas City. He was a member of the firm of Gray, Bryan & Sweeney, and was a vice-president of the National Retail Coal Merchant's Association. He was always active in retail circles in Kansas City.

Graham Wickham, vice-president of the Wickham Coal Co. of St. Louis who was well-known to the trade in Missouri, died at his home in Kinloch, Mo., near St. Louis, on Feb. 14.

Coming Meetings

New England Coal Dealers' Association will hold its annual meeting March 22 and 23 at Springfield, Mass. President, **W. A. Clark**, Milk St., Boston, Mass.

Society of Industrial Engineers will hold its national spring convention at the Hotel Statler, Detroit, Mich., April 26-28.

National Association of Purchasing Agents will hold its seventh annual convention at Exposition Park, Rochester, N. Y., May 13-20. Secretary, **S. C. McLeod**, 130 W. 42nd St., New York City.

National Foreign Trade Council will hold its annual meeting May 10-12 at Philadelphia, Pa.

Mining Society of Nova Scotia will hold its annual meeting May 15, at Sydney, N. S., Canada. Secretary, **E. C. Hanrahan**, Sydney, N. S.

American Society for Testing Materials will hold its twenty-fifth annual meeting June 26 to July 1, 1922, at Atlantic City, N. J., with headquarters at the Chalfonte-Haddon Hall Hotel. Assistant treasurer, **J. K. Rittenhouse**, Engineers' Club Bldg., Philadelphia, Pa.

The twenty-seventh annual convention of the Illinois and Wisconsin Retail Coal Dealers' Association will be held at the Hotel Highland, Delavan Lake, Delavan, Wis., June 13, 14, 15. Secretary **I. L. Runyan**, Chicago, Ill.